

MILITARY REVIEW

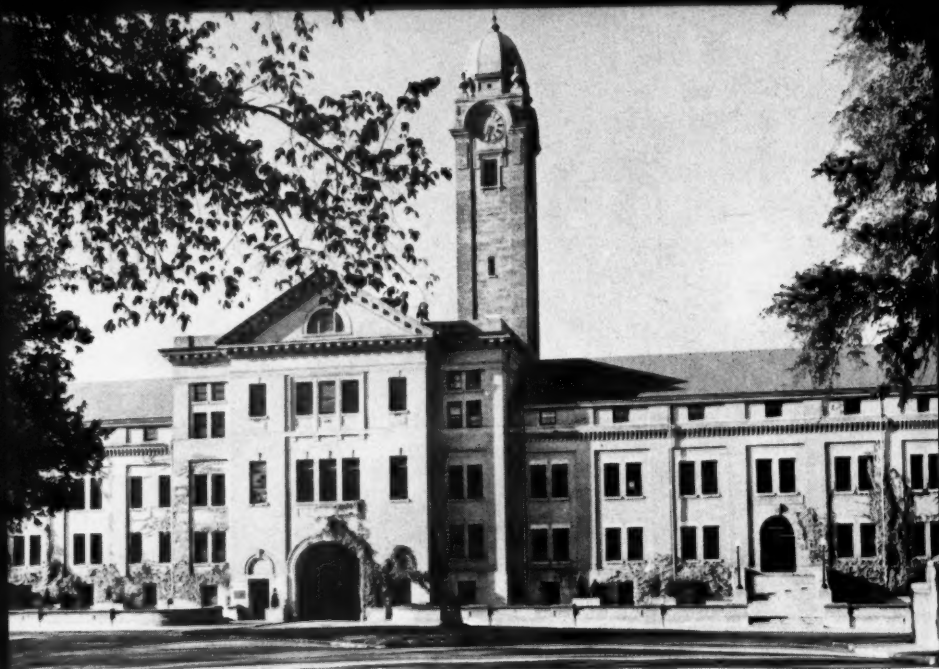


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JULY 1956

VOLUME XXXVI

NUMBER 4



COMMAND AND GENERAL STAFF COLLEGE

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A VITAL ELEMENT OF OUR NATIONAL STRENGTH

Secretary of the Army Wilber M. Brucker

The following are excerpts from an address given by The Honorable Wilber M. Brucker, Secretary of the Army, at the Command and General Staff College on 7 May 1956 in commemoration of the 75th Anniversary of the College.—The Editor.

THE United States Army has always been a vital element of our national strength. Its fidelity in the dark days of Valley Forge kept the flickering flame of liberty alive. Although the Colonial Army was weak in numbers, ragged, and half starved, the indomitable spirit that drove it onward won our country's independence. During the intervening 180 years the Army has played a dramatic role in the growth of the United States from a wilderness into one of the world's greatest powers. It has been the advance guard, explorer, mapmaker, constructor of bridges and dams, pioneer railway and roadbuilder of the young Republic. It harnessed the mighty Mississippi River, and has been active in the relief of every national disaster. It conquered yellow fever, and dug the Panama Canal. It pioneered the atom bomb and developed nuclear energy. In almost every field of human endeavor the Army has rendered signal service to Amer-

ica. Throughout the years it has been the staunch military bulwark of our Nation and of our heritage. In more than 100 campaigns, expeditions, occupations, and wars—from the American Revolution to Korea—it has successfully defended our freedom against every enemy.

We have a defense program today which assures a high degree of stability in military policy conducive to effective long-range planning—a program which makes possible the maintenance of adequate military strength over a protracted period of danger. The Army is able to shoulder with confidence the tremendous responsibilities which rest upon it. These responsibilities have been increased manifold by the global expansion of the mutual defense system in which the United States is now associated with 45 other nations to defend the free world. As evidence of America's good faith, more than 40 percent of our Active Army is stationed overseas on the frontiers of freedom. Army troops are standing shoulder to shoulder with the troops of our allies, on constant guard against any aggressive move anywhere in the world. At the same time, our Army is helping to train over 200 foreign divisions, a substantial part of the free world's total strength.

In the outmoded days of the past, it was

The military threat of aggression—by land, sea, and air—we face today is an all inclusive one and our ability to cope with it depends upon the combined strength of the defense team, not on any one part of it

said that the Army should be called in only when statesmanship had failed and war was actually upon us. How far we have come in this regard is best illustrated by the universally accepted concept that our Army is one of the strong pillars of dedicated statesmanship by which we are seeking to keep the peace. The Army is a powerful deterrent to war and an instrument for peace. Our overseas forces constitute visible evidence to the leaders of the Communist conspiracy that we mean exactly what we say, that we steadfastly intend to resist aggression in any form. The presence of our troops stimulates the morale and stiffens the resolution of our friends by constantly reminding them—not in mere words but in the solid substance of American soldiers and American armaments right there with them—that we are in this thing together, and that we intend to see it through together. There can never be any occasion for an aggressor to explain that he “misunderstood” our position.

Significant Impact

The Army's influence in relations between our Government and others has always had a significant “grass roots” impact upon our friends abroad. In World War II people throughout the world who had known little or nothing about America came into contact with a broad cross section of our citizens in the Army uniform. Despite the unnatural stresses and strains of war, the effect was good. Even today America is best known to millions as it is

epitomized by the American soldier, and he is doing a splendid job of cementing the friendships between peoples upon which depends, in the final analysis, the success of our efforts to build solidly for peace and not for war. The members of our Military Assistance Advisory Groups and Military Missions, going about their various training assignments in 44 countries, are proving to be especially effective ambassadors of good will and international understanding.

Although the paramount purpose of our entire defense team is to deter aggression—to prevent war—we know that in order to be an effective instrument of deterrence it must be prepared to fight and to win under any circumstances. The evidence of its ability to do so must be so clear and so convincing that a potential enemy cannot fail to realize in advance that resort to armed force would be a fatal mistake.

If it should come to actual fighting, the major combat burden would sooner or later fall upon our ground troops. No technological advance has diminished their importance. Weapons, equipment, and tactics have been revolutionized many times in the 40 years since I slogged through the mud of France with the Rainbow Division in World War I, but the fundamental role of the Army has never changed. It is the component of the defense team which has the means and capability needed to gain and maintain control over an enemy's land, his resources, and his people. The Army's aim is not merely to wreak destruction upon an enemy, but actually to conquer him—which is the ultimate wartime goal of all military action. As long as man lives on the land, and depends upon it for his sustenance, final victory in any military conflict will be gained on the ground. It will be gained by men who meet the enemy face to face and dig out the roots of his resistance. The idea that wars can be won by remote control, with pushbuttons, is a dangerous myth. It can lead only to psy-

Mr. Wilber M. Brucker was graduated from the University of Michigan in 1916. He was a member of the 33d Infantry, Michigan National Guard, and saw service on the Mexican Border in 1916-17. He served in France during World War I with the 166th Infantry, 42d (Rainbow) Division, in all of the division's engagements. In 1930 he was elected Governor of the State of Michigan and served until 1933. He served as General Counsel of the Department of Defense from April 1954 until taking office as Secretary of the Army in July 1955.

chological, spiritual, and downright physical unpreparedness for the realities of military conflict.

Solemn Obligation

All of us have a solemn and inescapable obligation to the American people whom we serve to be as articulate as we possibly can about the cold facts of military security. We must tell them what constitutes our power for peace. We have a responsibility to spell out in plain terms the Army's vital part in the attainment of our national objectives. If ever there was a truly "peoples' army" it is the one we represent, in which the sons and daughters of America are enlisted to defend our Republic. The people have every right to know how their Army is discharging its trust. Can we afford not to keep them properly informed?

No amount of high-level, expert public relations activity, no Chief of Information, no staff of specialists can do what must be done by the members of the Army down through the ranks. For years the idea has permeated the Army that "virtue is its own reward" and, therefore, an officer should do his job and remain aloof from the public. This notion must be dispelled. It is not enough to do a good job—the American people must know their Army is doing it. The time has come when no Army officer can sit in the bleachers and act as a mere spectator. Public relations is not the job of the few, but of the many.

Our Army must be prepared to fight successfully against any aggressor, any time, and on any terms. In order to carry out its mission, it must be a strategically mobile Army. Its major units must be fully air transportable over long distances, between continents and across oceans, to any trouble spot in the world. We have made considerable progress in attaining that degree of mobility. We know, for instance, that if the need arose and we were assigned the requisite transport aircraft, we could fly

an entire airborne division, together with its essential automotive equipment and its organic artillery, from the United States to any part of Europe and Asia. We could get our troops and equipment there in time to dominate a dangerous situation before it got out of hand.

Our Army must be a tactically mobile Army. It must be able to fight under the unprecedented conditions of the atomic battlefield. Because of the introduction of nuclear weapons, there can be no battlelines in the future as we have known them in the past. The battlefields of the future will be vast areas, hundreds of miles in width and depth. Troops will be widely dispersed in relatively small combat groups—isolated islands of strength—in order to minimize the effects of atomic weapons in the hands of the enemy. But they must be able to move swiftly to the attack by means of air and ground vehicles in order to exploit to the fullest the effects of our own tremendous firepower. The Army is developing this tactical mobility to the maximum extent. For instance, a fleet of *Flying Boxcars* could lift the entire assault element of an airborne division and drop it into battle at a point 750 miles from its base. We have a new assault transport which can take off from or land on any reasonably level field with 60 men and their individual equipment. Small groups of 14 to 18 men can be efficiently moved by the Army's own light cargo helicopters and put down on extremely rough and inhospitable terrain.

Must Have Best Weapons

Our Army must also have the best weapons that science and industry can provide—both atomic and conventional weapons precisely adapted to its needs. Because of the conditions under which a war of the future will be fought, our artillery must have far greater range and punch than in the past. We are, therefore, laying major stress upon the development of entire fam-

ilies of guided missiles, ballistic missiles, and rockets to supplement the big guns with which our troops are armed, such as the 280-mm atomic cannon, a splendid weapon capable of great destruction.

The first of a versatile family of offensive guided missiles is the *Corporal*, which is in the hands of troops and ready for action at any time it is needed. It is capable of delivering an atomic warhead of terrific power on targets at long ranges. The mighty atomic artillery rocket, the *Honest John*, an outstanding weapon for the close-in support of ground operations, is also in the hands of troops. It will be part of the organic artillery of the newly reactivated streamlined 101st Airborne Division, which is being organized on the basis of 11,500 troops in consonance with the most advanced principles of tactical employment.

The Army has made tremendous forward strides in the development of an accurate longer-range surface-to-surface ballistic missile. I want to emphasize that word "accurate." Extended range alone is not sufficient. It is essential that a weapon of this nature possess a high degree of accuracy under all circumstances. That is the first consideration. It matters little how far you can propel a missile if at the end of its flight it does not hit the target at which you are aiming. Keeping this principle firmly in mind, scientists at the Army's Redstone Arsenal in Alabama devoted their time and energy for almost 8 years to the problems of design, propulsion, and control fundamental to the attainment of maximum accuracy. They did not dissipate their efforts by attempting at the same time to attain maximum distance. Within the past year, however, they achieved such accuracy that they are now reaching out for distance with a fundamentally accurate weapon—the Intermediate Range Ballistic Missile (IRBM).

The Army's need for a ballistic missile with a range of approximately 1,500 miles

coincides with the Navy's requirement for a similar missile which can be launched from a ship or submarine, which has led to the joining of Army and Navy scientific talent and resources for the development of the IRBM called *Jupiter*. This Army-Navy team is now proceeding at top speed to attain the required distance, and I can assure you that we are making substantial progress which will minimize the time necessary to assure success.

Meanwhile, we are getting ready to place the shorter-range *Redstone* missile in the hands of troops. While we do not feel that any missile could ever be in any sense an "ultimate" weapon, this will be a tremendously important addition to the artillery, and enhance the Army's ability to accomplish many important jobs. Our offensive missiles will give field commanders firepower never before approached to demolish pinpoint targets deep within enemy-held territory, despite fog, rain, snow, or any other adverse condition.

In the realm of defensive guided missiles, the *Nike* system is now the Nation's major ground weapon against hostile aircraft. Battalions armed with these deadly missiles, which are capable of coordinated and controlled fire, have progressively been substituted for conventional anti-aircraft gun battalions until, at the present time, they predominate in the defensive rings around our great centers of population and production.

While the missiles and rockets I have mentioned are all wonderful weapons, we have no intention of dispensing with other weapons of proved and continuing worth. A combat army must have the weapons and equipment exactly suited to each task it must perform. It must have the means to apply selectively the exact amount of force required to meet each situation. From the incredible power of a guided missile to the silent thrust of a bayonet, our Army must always be ready with the right answer.

High Priority Undertaking

A high priority undertaking to which it is imperative that every member of the Army address his best efforts is the building up of adequate Reserve forces, both National Guard and Army Reserve. The public must be fully informed about the need for a strong Ready Reserve in terms of the security of each individual citizen. The young men of America, their parents, their employers, and all who are concerned with their well-being must be informed about the advantages afforded by the Reserve Forces Act of 1955—especially the 6-month training provisions—the advantages to be derived by the young man himself as well as the community-at-large. Already over 30,000 have enlisted in the Army Reserve, and they are coming in right now at the rate of more than 1,400 a week. This is proving to be something that appeals to young Americans, and those I have observed in training at various camps are making splendid soldiers, eager, disciplined, and receptive to instruction. They are worthy of the honored uniform they wear. This program is rolling, and it is up to all of us to put forth every effort to keep it rolling, and gathering momentum. We must tell the story of the Ready Reserve!

Ours is the forward-looking and forward-thinking Army of Tomorrow, ready to meet whatever challenge the future may hold. Here at the Command and General Staff College is being developed the kind of leadership that will keep it so, leadership that will be ready and able to cut a new pathway through any jungle of precedent, custom, or tradition which blocks the march of true progress. Such leadership leaves no avenue unexplored which might lead to a better way of doing things.

Today's officer must have the mental flexibility, the imagination, to utilize to the

fullest extent the developments of modern technology. Nevertheless, he must not lose his soldier's soul in the laboratory. Above all he must have the integrity and character of a Washington, the moral convictions of a Lincoln, and the tenacity and fighting ability of an Eisenhower, a MacArthur and a Patton. These are high standards, but they are the standards of our present dedicated leadership, and will always be the hallmarks of the great officer.

The Defense Team

The military threat of aggression we face today is an all inclusive one—by land, sea, and air—and our ability to cope with it depends upon the combined strength of the defense team, not on any one part of it. It is teamwork that counts. Every soldier knows that he is a bigger man with the group than he is by himself. The same is true of the military services. Working together makes each more powerful and effective than it could be by itself. In this case we have to throw away the arithmetic book, for the whole is far greater than the sum of its parts. We have a real team within the Department of Defense. Each member of it is dedicated to the common purpose. There is no divisive rivalry, only a healthy spirit of competition which ensures maximum capability for the team as a whole.

The United States Army has a glorious past to which this great college has made countless splendid contributions. It has an ever greater future in which Leavenworth will play a leading part. Bright as are the pages of the Army's history which dedicated and heroic men have been writing for 180 years, the brightest pages are still unwritten. There is a couplet which expresses my high confidence in its future:

The Army's strong; the Army's young,
And its greatest songs are still unsung.

NEEDED:

Joint Doctrine on Close Air Support

Colonel Gordon A. Moon, II, *Artillery*
Faculty, Command and General Staff College

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

SINCE its inception in 1951 many prominent civilians and literally thousands of Army and Air Force officers, from generals to lieutenants, have passed through the short indoctrination course of the Air Force School of Air-Ground Operations at Southern Pines, North Carolina. The school faculty, consisting mainly of Air Force and Army officers, with United States Marine Corps and Royal Air Force representatives, does an outstanding job under the direction of an Air Force commandant, assisted by an Army deputy. Graduates of the course are unanimous in their enthusiasm about the effectiveness of the training aids and the excellence of the instruction.

There is just one flaw in the rosy picture painted so well at Southern Pines: the joint aspects of the instruction are based upon a document that has not been accepted by either the Department of the Air Force or by the Department of the Army. It is almost incredible, but literally true, that *we have no joint doctrine today* on air-ground operations, nor have we had any since the Air Force and the Army "unified" into separate services in 1947.

An attempt was made in September 1950 to bring up to date the old Field Manual 31-35, *Air-Ground Operations* (1945), by publication of a document entitled *Joint*

Training Directive for Air-Ground Operations. This was only a trial balloon on the part of Tactical Air Command and Office, Chief of Army Field Forces; the introduction to the text clearly stated that it was issued with a view toward incorporating its provisions into a joint departmental level publication after adequate field testing. However, on 31 January 1955, the Department of the Army considered it necessary to disown this unwanted offspring even more conclusively by publishing Training Circular 110-5, stating that continued distribution of the Joint Training Directive within the Army is made only for the purpose of having some basis for joint training procedures with the Air Force pending resolution of divergencies, and that "... the document does not represent the views of the Department of the Army on doctrine for air-ground operations."

The differences between the Army and the Air Force are complex, and the areas of conflicting interests are broad and interrelated. However, without any intent to minimize the importance of other questions of joint concern, let us consider for the purpose of this discussion only the subject of so-called "close air support," which may include both reconnaissance and offensive air missions.

It is generally accepted by both Army and Air Force officers that a tactical air force has three basic tasks: it must fight a counterair battle, in which the Army has great interest as to the outcome but little or no say in the execution; it must interdict the battlefield, in furtherance of joint plans by the Army and Air Force

commanders; and it must furnish close support to its associated field army. It is the last mentioned task that causes most of the disagreement. If the manner in which close support is to be provided could be settled, misunderstanding and lack of proper coordination on joint interdiction responsibilities would be resolved more easily.

It appears that the real argument between the Army and the Air Force on close support is not a question of how many sorties will actually be flown in a campaign for any one of the three basic Air Force tasks as opposed to the others; the totals will probably come out about the same regardless of what methods, agreements, or procedures are used. The tactical situation will dictate the broad aspects of how the effort is to be used, as it did in World War II and in the Korean conflict. Most Army officers appreciate the absolute necessity of achieving an acceptable degree of control of the air before large-scale ground operations can be conducted with a reasonable assurance of success; also, they realize that if the Air Force commander is to perform this task effectively, he must have the tools to do the job.

"Not Joint at All"

Our differences, at the risk of oversimplification, boil down to a question of procedures, mental attitude, and degree. The Air Force wishes to maintain complete freedom of action at all echelons of command, and to deal with the Army

at Southern Pines, based on the Joint Training Directive, goes along essentially with the Air Force position. Under the concept now being used in joint training exercises—under protest by the Army—a so-called joint operations center (JOC) is established, at which the field army and tactical air force commanders and their representatives meet on a coequal basis. In spite of its name, this facility is not joint at all. It is an Air Force operations center; it is the command post of the tactical air force and moves as an integral part of that headquarters. The field army sends representatives, in effect, to the tactical air force headquarters. These representatives present Army requirements—which the Air Force prefers to call "requests"—for air support on a day-to-day basis. There is no assurance of execution of such a mission, since the Air Force reserves the right to pass on each request from a suitability standpoint; nor is any allocation made in advance upon which division, corps, and field army Air Support Plan appendices to Fire Support Plans can be based.

In considering procedures appropriate to any type of joint operation, a fair question is: "Does this procedure handicap the combat effectiveness of either one of the services?" Unless this question can be answered in the negative, every effort should be made to reconsider and readjust procedures until the optimum practicable solution is reached.

For the Air Force there appear to be

Present ideas on air-ground operations are confused, conflicting, and unsatisfactory. To resolve this situation we must place our national defense above interservice jealousies and the unilateral state of mind

below unified force level strictly on the basis of cooperation. The Army feels that it must have greater assurance of positive commitments during definite operational periods.

The *status quo*, as now being taught

no serious objections to the system for air-ground operations as presently taught at Southern Pines. For the Army it is quite a different matter. Leaving aside any discussion as to which is the supporting or supported service in a particular

theater, or for a given campaign, most reasonable men will agree, regardless of the color of their uniform, that at least for the one task of providing close support the tactical air force gives its assistance while the Army performs a mission in which it has the dominant role. This is just another way of saying that when rendering close air support, elements of the tactical air force are, or should be, supporting the field army.

Supporting Relationship

Regardless of whether the supporting relationship of one force to another in a given situation is formally recognized, as in the case of an artillery battalion with a mission of direct support of an infantry regiment, certain obligations must be met by the supporting unit if best results are to be achieved. Probably the most basic idea in this relationship, and one which is reflected throughout Army tactical doctrine, regardless of the type of unit, is the responsibility of the supporting unit to make every practicable effort to assist and not hinder the operation of the supported unit. Invariably, the supporting unit establishes the necessary communications with the supported unit; the supporting unit commander coordinates with the supported unit commander—not vice versa—and, when appropriate, liaison officers are maintained with the supported unit to determine its requirements

Colonel Gordon A. Moon is a graduate of Alabama Polytechnic Institute at Auburn. During World War II he served in the South Pacific area where he commanded the 4th Field Artillery Battalion. He was assigned to Headquarters, Army Ground Forces, for a 2-year period and following his graduation from the Regular Course of the Command and General Staff College in 1948, he became an instructor at the Air Command and Staff School. After serving 3½ years with Headquarters, Allied Air Forces Central Europe and Headquarters, Allied Land Forces Central Europe he was assigned to the faculty of the College in February 1955 where he is presently serving as Academic G1.

and to act on them expeditiously. Somehow this concept has been turned topsyturvy in the field army-tactical air force relationship. Even for close support requirements, the Army must send representatives to the Air Force headquarters (JOC); also, the Army must establish and maintain communications for these individuals. Is this arrangement a handicap for the Army? Yes, and substantially so.

As originally conceived, the JOC was to be astride the imaginary fence separating adjacent field army and tactical air force headquarters. Under this concept there was little or no separation of personnel working in the JOC from other staff sections or headquarters facilities. However, in practice, proximity of the two headquarters cannot be assured and the JOC, as an Air Force facility, goes with the air control center. Thus the representatives of field army must operate frequently at considerable distances from other elements of the field army headquarters; coordination is extremely difficult, delays and misunderstandings occur, and effectiveness declines. Nevertheless, if the Army wants air support, it must tag along until other agreements can be reached or better arrangements made.

Handicaps to the Army

One of the most fundamental of military concepts is the truism that coordinated application of force is more effective than piecemeal employment. Effective coordination of effort normally requires time and planning, as opposed to impulsive action and use of expedients. This applies particularly to fire support. Seldom, if ever, does a commander have enough fire support in a major engagement to employ it promiscuously; only by careful planning and integration of all fire support means with the scheme of maneuver can the operation be assured the best chance of success. Close support air strikes can be an asset to the Army commander if applied at the right time and place.

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Weather always interposes some uncertainty as to the practicability or effectiveness of an air strike, but aside from considerations beyond human control the Army commander must have some assurance in advance of how much air support he can expect. Without this prior commitment, an integrated fire support plan cannot make best use of air support capabilities. Plans made at division and corps level for use of air support, under existing arrangements with the Air Force, are on a day-to-day basis, and the air portion of the fire support plan cannot be assured even at field army level until after the evening planning conference with the tactical air force. This often is too late for the army elements to compensate for air support which had been required and planned, but at the last moment denied. Consequently, Army planners who have experienced this situation tend to disregard air support as too doubtful a factor to include as a full-fledged member of the fire support team. Air support becomes a bonus—nice to have, but not to be counted upon until it happens. Does this free aircraft for counterair or interdiction missions? Not necessarily.

Faulty procedures and inadequate service relationships, then, result in waste or inefficient use of air sorties. Obviously, this is an undesirable situation for both services, but since the net effect is a reduction of effective firepower on ground targets, it must be considered as a definite handicap to the Army.

Any solution that alleviates the Army's problem may reduce, or seem to restrict, Air Force flexibility. The requirement, then, is to improve the Army position in regard to air support without doing so at the expense of the Air Force, or, by imposing restrictions or obligations on the Air Force only to the extent that any handicap incurred would be to a much lesser degree than the difficulties facing the Army under current arrangements. In

brief, we should seek a solution that gives a net gain in over-all effectiveness of the two services taken together.

New Ideas or Modifications

The point has already been made that Army-Air Force inability to get together on close support is caused by a state of mind, rather than by any fundamental cleavage on end results desired; by a failure to appreciate the degree to which mutual efforts must be coordinated; and by a lack of procedures acceptable to both services. With this in mind, the following new ideas and/or modifications of old concepts and procedures appearing in the Joint Training Directive should be considered:

Definite Allocations

Definite allocations of air effort to missions in support of elements of theater Army should be made by the commander of the *tactical air command*, in coordination with the army group commander, and in consonance with policies enunciated by the theater commander, for prescribed periods of time. This would stabilize the picture on air support sufficiently to permit proper planning and efficient use of air strikes at the field army-tactical air force level. It would not, or should not, change any concept on priority of employment of aircraft. However, in case of serious disagreement on the part of the field army or army group commander as to allocation of air effort, the level of joint coordination would be one step nearer the level of decision (unified command, or theater), and resolution of the difference would be easier than at present.

Relationships

The relationship between the field army commander and the tactical air force commander on close air support should be recognized formally as support of army elements by the air force.

Once an allocation was established for support of army elements by the tactical

air command, the tactical air force commander should be obliged to support the field army with these elements of his force in much the same manner that an artillery battalion commander with a direct support mission supports an infantry regiment. There would be no usurpation of air force command by the army; but missions would be flown to the full extent of aircraft capabilities as and when the army indicated a requirement. The tactical air force commander should not divert air units assigned an army support mission without prior approval of the commander of the tactical air command. In each instance of changed missions for army support aircraft—diversion by the air force—the commander of the tactical air command should coordinate with the army group commander.

At army group level it should be possible for both the army and air commanders to agree on allocation of aircraft with a more objective view of over-all benefit to the joint effort than could normally be achieved at a lower echelon, where effective coordination is often clouded by conflicting minute-to-minute requirements. One exception to this procedure must be made clear: the tactical air force commander would always have the prerogative to take appropriate action immediately in an emergency situation if required to preserve his force.

No Need for JOC

With a definite allocation of air effort in support of the field army, there would be no need for the establishment now known as the JOC. In its place the tactical air force should send to the field army headquarters an operations detachment consisting of officers qualified to direct the allocated reconnaissance and offensive air missions in support of the army. Air force communications should be provided the detachment to link it with the air control center (and with the tactical air force headquarters, if separate)

and with appropriate reconnaissance and fighter-bomber airfields.

In an emergency situation the tactical air force commander might intervene, but normally the air units with a mission of army support at any given time would take their orders directly from the air force detachment located at field army headquarters. There would be no command authority exerted by army personnel over members of the air force detachment. Their sole mission would be to support elements of field army and to effect appropriate coordination between the tactical air force and field army headquarters.

Additional Support Requests

Requests for air support in addition to that allocated could still be made by the army. These requests could be processed by the air force detachment back to the air force headquarters, or by personal contact on the part of the service commanders or staff officers. There would be no assurance, even as now, that such support could be provided, since it would depend upon the extent of air commitments on other tasks.

Better Liaison and Control

The army should continue to send ground liaison officers (GLO's) to air force fighter-bomber and reconnaissance airfields. However, it normally would not be necessary to provide them to air units that did not have the mission of army support.

Providing an air force operations detachment with the field army headquarters would enable the tactical air force to exert greater control over its liaison officers (ALO's) at corps and division, and over the forward air controllers (FAC's) working in the air control teams (ACT's). An important air force communications link between these personnel and the air control center (ACC), heretofore neglected, could thus be provided.

Army requests for air support should be processed at division and corps level by the same air officers (ALO's and FAC's)

who later direct the strike. These requests would be subject to approval or monitoring in appropriate fire support coordinating centers (FSCC's), but the request system would be analogous to the artillery system for requesting fires. Under the present concept, there is a duplication of army and air force personnel and communications equipment. Communications should be provided, in the division, to permit direct contact between a FAC and the air force operations detachment at field army level in exceptional circumstances, and when appropriate priorities are so established at army FSCC. It would thus be possible to have a more effective system for employing aircraft on ground alert to support a frontline unit with a minimum of delay.

Fundamental Concept Changes

Some of the considerations noted here are refinements which would be made possible by two fundamental changes in present concept:

1. Furnishing definite allocations of air effort at *some level* to support the Army.
2. Providing direction of supporting air effort at the focus of Army control rather than at the focus of Air Force control.

Would these proposed changes handicap the Air Force? Certainly in one sense there appears to be some loss in flexibility, particularly at the level of the tactical air force. As was pointed out earlier, any change might be expected to require some "giving" on the part of the Air Force, since the present concept imposes neither restraints nor requirements on that service. But, is this seeming loss of flexibility a serious matter? I submit that it is not. The level of Army-Air Force adjudication has simply been moved up one level. Actually, this *increases* over-all Air Force flexibility. The greatest flexibility would be achieved if all operations were conducted at theater level—maximum centralized control. The balancing factor that prevents such all-out exploitation of flex-

ibility, of course, is the requirement to conduct operations at such a level that a commander still can react quickly and decisively.

The proposed change, in effect, is one step toward greater centralized control of air operations, which is in keeping with vastly improved aircraft performance, increased aircraft speeds, and a more realistic appraisal of how the air battle must actually be fought. It is not just idle conjecture to visualize a situation where the boundaries assigned a field army on the ground simply will not work for a tactical air force, which is now expected to conform to the same lateral zones of responsibility. With a small field army in a rather narrow sector, there may not be adequate maneuver space for the numbers of jet aircraft assigned to the tactical air force; or, complications may develop in siting radar installations of the tactical air control system. Under the changed concept proposed here, it might be feasible under appropriate circumstances for one augmented tactical air force to support two field armies. Thus the flexibility of Air Force operations, in a broad sense, would be infinitely greater than under existing concepts.

Problem Can Be Resolved

One thing is clear: present ideas on air-ground operations are confused, conflicting, and unsatisfactory; there is *no agreed joint doctrine*. How long can both services accept or will national security tolerate this situation? The problem *can* be resolved, and it can be accomplished with mutual benefit to both the Army and the Air Force—certainly, without serious handicap to either. One approach toward a solution is presented here. Doubtless there are others. Essential ingredients that can be supplied only at a high level in both services are a willingness to come to grips with reality and a determination to put national defense above interservice jealousies and the unilateral state of mind.

THE STRATEGIC LOCATION OF SOUTH AMERICA

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

MOST American citizens are quite aware of this country's basic defense problems, and realize how very vulnerable the bulk of our Nation's industry is to Soviet air attack. With 20 percent of all our industry concentrated inside a circle drawn a hundred miles or so from Philadelphia, and 70 percent concentrated in the northeastern one-sixth of our territory, we present a lucrative target to any air-minded aggressor. Because of this potential vulnerability, some very significant aspects of the world's geography should be analyzed in the light of current technological developments in aeronautics and missiles.

Geographically speaking the earth consists of a land hemisphere and a sea hemisphere. The immense "world island" which constitutes the bulk of the land hemisphere possesses one major appendage—a vast peninsula which we call South America—which militarily speaking is physically remote from the rest of the "world island." This peninsula can be a bastion of strength for the free world by virtue of its remoteness from that homeland of aggressors, the Central European-Asiatic "heartland."

Before getting involved in geopolitics, however, some of the known facts about new developments in aircraft and guided missiles should be discussed as these new developments in technical fields give vital significance to this geographical study.

Both the United States and Soviet Air Forces have long striking arms. One of the reasons that none of the Asiatic hot spots of the last 6 years has developed into a large-scale war is that all parties concerned have been gravely aware of the retaliatory power of all other parties. The gravest dangers of the Korean conflict sprang from the fact that United States retaliatory power had slipped to a dangerously low ebb. However that may be, the long-range striking arm of Soviet airpower today consists of a large fleet of *Tu-4's* (copies of our *B-29*), and a lesser number of the *Bison*, the Soviets' new long-range heavy atomic bomber now in mass production. This aircraft is certainly capable of greater speeds and ranges than the *B-29*.¹

No more than a glance at the globe is needed to see that current range capabilities put all of northeastern United States and 70 percent of American industry within very easy striking distance of any of a dozen or more known Soviet air bases. With thermonuclear weapons, which the Soviets would certainly not hesitate

¹ An Air Force spokesman recently indicated the Soviets have produced about 100 of their *Bison* intercontinental bombers which are comparable to our *B-52*.—The Editor.

to use except for the fear of retaliation, the United States could be relegated to a third-rate power in a single successful attack. Air defense measures would blunt the attack and soften the blow, but they would not prevent it for only one bomber need slip through the air defense of a vital area to cause a devastating amount of damage.

Suffice it to say that right now the industrial northeastern United States is entirely within range of existing Soviet massed striking forces, as well as the more sparsely settled remainder of this country. For the purposes of this analysis, however, let us go a few short years beyond conventional piloted aircraft to the age of guided missiles, when piloted and unpiloted missiles will fly at many times the speed of sound, have ranges much in excess of the missiles of today, and by virtue of their speed will be virtually immune to defensive countermeasures.

ICBM

It is this missile of the future, which has been dubbed the Intercontinental Ballistic Missile (ICBM), which poses the most serious air threat to the military security of the United States. This fact has been recognized since the last days of 1944 when the Allied air defense forces of London and Antwerp were unable to put

a ballistic missile which follows a cannon shot trajectory and falls at the speed of a meteor. The German V-2, for example, attained a speed of 5,000 miles an hour—over eight times the speed of sound.

Of course the great mass of information on United States and Soviet technical developments in the field of ballistic missiles is very jealously guarded, but indications of current capabilities are found in historical facts and published plans. At the very moment that mass-produced V-2 rockets were dropping a ton of TNT at a time on London, the German scientists at the Peenemünde rocket center had plans on their drawing boards for a super-rocket to be fired across the Atlantic to New York—a V-10 with a range of 5,500 miles. Given sufficient funds, more time, and raw materials, these scientists might have produced a trans-Atlantic missile with an atomic warhead. Many of these same scientists are now working for the Soviets.

The range of 5,500 miles is closely correlated to this geographical study. Although future weapons may conceivably have greater ranges, the relative truth of the proposition stated remains unaltered because the bulk of South America is much farther from Soviet-dominated territory than any other inhabited place in the world. An ICBM with a range of 5,500 miles, when fired from any one of

Militarily speaking, the vast peninsula which we call South America is physically remote from the rest of the "world island." It is the one land area in all the world today beyond the reach of Soviet airpower

up a defense against the German V-2 Vengeance rocket.

Antiaircraft defenses were then, and still are, quite capable of hitting and knocking down flying missiles—aircraft supported by wings and flying not too much faster than the speed of sound. But it is far more difficult to hit or divert

numerous points within the Soviet Union, can be made to fall anywhere in North America, Europe, Asia, Africa, and Australia. Likewise, missiles with this range, fired from any of numerous points in the United States or other countries in the free world, can be made to fall in Soviet-controlled territory.

The range of 5,500 miles is, therefore, very significant when the elements of global geography are analyzed. Even if the Soviets' missiles achieve this range, the longest range mentioned by current planners, the *Soviets cannot hit South America*—South America has the immunity of remoteness from Soviet air and missile power which no other place in the world can claim.

An examination of a map of the world portrays what this really means when some trajectories of 5,500 miles are analyzed. Although the map used here is quite distorted in order to show all the world's land area, it can be adequately used to illustrate the subsequent discussion. This map is basically an offset polar projection of the earth that shows the bulk of the "world island" in approximate perspective. The true perspective can readily be attained by using a globe and swinging arcs from the points indicated on the map.

As a point of departure, a few strategic points in the Soviet Empire's land area have been selected from which 5,500-mile arcs can be subtended to see where the Soviet Air Force can strike if it develops a 5,500-mile ICBM. The first point, Attack Area 1, is selected in Siberia where Soviet territory is only a short distance from Alaska. In the mountains behind Cape Dezhnev on the Bering Straits lie air bases and possible missile launching sites which can hit anything north of the

5,500-mile arc drawn through Costa Rica in Central America to Puerto Rico in the Antilles, from Costa Rica west into the South Pacific, and from Puerto Rico east across the Atlantic to Gibraltar. In other words, inside "Arc Number 1," drawn from this far easternmost extremity of Siberia, lies all of North America, all of Europe, and practically all of Asia. This arc has taken in almost all the land area in the world except Africa, Australia, and South America.

Of course, this base might be relatively easy to knock out, but the Soviet and Chinese Communists own many other places from which an air or missile attack could be launched. Suppose Attack Area 2 was established in the South China hills in the province of Kwangsi, somewhere halfway between Hongkong and Chungking. Using this point as an origin, "Arc Number 2" places all of Australia, all Asia, a portion of Africa, and all of the archipelagos of the South Seas within range of the 5,500-mile atomic missile. Perhaps these areas are remote, but it must be remembered that we are searching for places on this planet so remote that a Soviet missile attack cannot reach them. So far in this search only Africa and South America have not been hit.

Moving westward toward European Russia, Attack Area 3 is selected in the Crimea inland from Yalta and is used as the origin of "Arc Number 3." In addition to Europe and South Asia which can already be reached from Areas 1 and 2, all of Africa is now within range. Enough said—only South America is still inviolate.

This being the case, in the search for an Attack Area Number 4 which will come as near as possible to hitting South America, any of the Soviet Union's European satellites could be considered. Using an attack area near Prague, Czechoslovakia, "Arc Number 4" is drawn with the point of origin just inside the northeastern ring of the Czech Carpathian Mountains. Al-

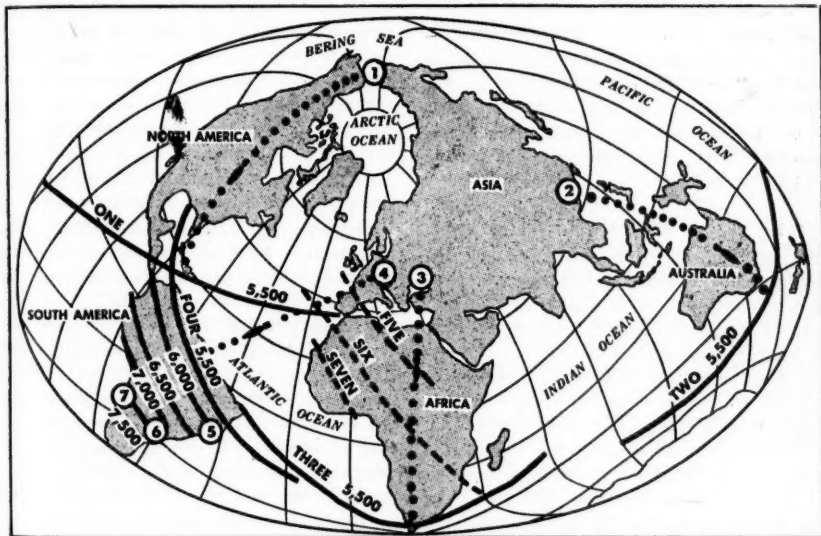
Major Theodore Wuckoff served in the Caribbean theater in World War II. From 1946 to 1949 he was a member of the Joint Brazil-United States Military Commission in Rio de Janeiro. He has served in anti-aircraft and field artillery assignments in both the United States and the Seventh Army in Germany. He received his Bachelor of Arts degree from the University of California in 1942, is a graduate of the Advanced Course at The Artillery and Guided Missile School, Fort Sill, Oklahoma, and is presently assigned to Princeton University for a 2-year graduate course in International Relations.

though the hypothetical maximum range of 5,500 miles has been used throughout this article, other arcs are drawn from this point increasing the range in 500-mile increments to 7,500 miles for illustrative purposes.

From the attack area near Prague, it can be noted that "Arc Number 4" just barely skirts the tropical northern coast of South America, and takes in, as have

fact from another point of view, consider how far Soviet land forces would have to progress before they could establish launching sites to attack these South American cities.

Before a Soviet ICBM could hit São Paulo, Soviet infantry would have to fight across all of Germany, the Low Countries, most of France, and enter Spain, or occupy the extreme southwest of France.



previous arcs, most of the United States, most of Africa, and most of Asia. But the bulk of South America remains inviolate and untouched.

If the Soviets desired to hit the industrial center of Southern Brazil, Uruguay, Argentina, Chile, and Peru, what ranges would they have to attain? To hit São Paulo or Rio de Janeiro these missiles would have to attain a range of 6,000 miles; to hit Montevideo, Buenos Aires, or Lima they would have to go 7,000 miles, and to hit Santiago and Valparaiso the range would have to be in excess of 7,500 miles.

To look at this extremely significant

This is illustrated graphically as defensive "Arc Number 5"—indicated by a dashed line.

Dropping down to Buenos Aires and taking a look at the world from there, it is obvious that the Soviets could not hit Buenos Aires—or Montevideo—from anywhere in Europe. They would have to cross the Mediterranean and drive to southern or western Africa before they could reach this far. This is illustrated by defensive "Arc Number 6," with Buenos Aires as its origin.

Defensive "Arc Number 7" drawn from Santiago shows the even greater immunity enjoyed by both Santiago and Lima.

It was stated earlier that 70 percent of American industry is concentrated in the northeastern one-sixth of the country. It was pointed out that the Soviet Union's fleet of *Tu-4* and *Bison* bombers are capable of hitting this concentrated target complex with thermonuclear weapons. It was also indicated that the only real deterrents are the threat of retaliation and American air defense measures.

The particular significant strategic fact that should be studied and analyzed in detail is that our good neighbors in South America have an important ace in the hole—their continent is the one land area in the world, both today and in the foreseeable future, that cannot be hit by the 5,500-mile ICBM.

Conclusions

A program of establishing part of our fundamental industrial fighting strength in this continent so privileged by its immunity and remoteness should be explored. In cooperation with those South American nations which think most nearly like us, and which over the years have proved themselves to be our firmest friends, a coordinated industrial base for a strategic war reserve could be erected—a base in an area almost completely immune from air attack. Prior to World War II the Soviets moved their industrial base east of the Urals; with the concurrence and assistance of our South American friends,

a large industrial base could be constructed south of the Caribbean.

There are other reasons why additional cooperation should be effective with our southern neighbors in such a program of economic and industrial expansion, over and above the strategic reason outlined here. Competent observers have pointed out that some areas of Latin America are areas of chronic undernourishment, disease, and ignorance, and as such are prime targets for Communist propaganda and subversion. Several recent events have shown that communism is a very real threat in many of these areas. Guatemala was actually a Communist-controlled state for the better part of 10 years; British Guiana saw a Communist clique come into power, so that it had to be forced out by British troops; and in a few other areas Communists have at one time or another exerted varying degrees of influence on non-Communist governments.

The Soviet bid for economic influence in Latin America has come as a direct challenge to the United States. We can no longer remain passive. The geographical facts constitute just one more compelling reason why a major program of investment and industrial expansion in South America will benefit all of the Americas.

One basic fact is apparent: Even if the Soviets are the first to develop a 5,500-mile intercontinental ballistic missile, *they can't hit South America!*

Today, we face a new peril that is in many respects greater than any of the perils of the past. It takes an unaccustomed form. It is backed by resources greater than have ever been accumulated under a single despotic will. However, we need not fear, because we too have greater assets. We have greater solidarity and greater trust born out of our past fraternal association. But just as the danger assumes an unconventional form, so our response may also need to be different in its form.

Secretary of State John Foster Dulles

HITLER'S PRESTIGE EVALUATIONS IN WORLD WAR II

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

"THE beginning of wisdom," so runs a Chinese proverb, "is to call things by their right names." No hope is more fatuous in international relations, as the publication of the Yalta Papers attests, but occasionally one is surprised to find leaders of great nations so lacking in common sense that their utterances seem grotesque. For over 12 years there stood at the pinnacle of the German administrative system a man widely feared for his successes and condemned for his conscienceless brutalities but whose ignominious death in the backyard of his chancellery was to prove in keeping with the gutter-like utterances for which he is now becoming famous. Although Hitler and his associates were self-instructed in the Elder von Moltke's dictum "first to weigh the considerations and then take the risk," in fact they again and again disregarded fact for myth, knowledge for prejudice, evidence for conjecture, and finally caution for foolhardiness.

From the German point of view at least,

one of the great ironies of the tragedy visited on the nation in World War II was that so much was unnecessarily lost because of faulty prestige evaluations and decisions. Since a nation's reputation for power (or lack of it) is its prestige—an identifiable if not measurable component of national power—it follows that statesmen act on what they believe to be true. In an ideal world, leaders would, of course, have the whole truth on which to base assessments of the power of states, including their own, but nothing this side of heaven has yet enabled men to distinguish between falsehood and truth except on a post mortem basis. While the examination of international corpses may be instructive for the future, it hardly helps to change the past, and the statesmen are forever in Von Moltke's wilderness between weighing facts and taking risks.

It is lamentably true that the worth of final policy decisions is only proved after the event, and we must accommodate ourselves to the disturbing reality that these decisions are reached in terms of the facts at hand. These latter, of course, consist of what is *known* to be true and of what is *assumed* to be true, the end result being something less than certainty. We do not know what thoughts passed through Von Ribbentrop's head when he was condemned

Although Hitler inflicted grievous harm on the British, Soviets, and Americans, his suicide and the defeat of Germany attest to the danger of laying down national policy in terms of faulty prestige evaluations

to death at Nurnberg, but how different they must have been from the exultation he showed in September 1939! Hitler, a suicide in the ruins of the city he boasted would be the "capital of the world," and Mussolini, a lifeless corpse indecorously hanging head down from the beams of a Milan service station, bear mute witness to the miscalculations that plunged us into World War II.

Two Significant Answers

In the 11 years that have passed since the fall of the Third Reich, a small army of coroners has been busy dissecting the corpse to determine the cause of death, and not a few of these played a grisly role in the demise. Among the German generals, for instance, are to be found the beginnings of another "stab in the back" myth, not this time from the horrid social democrats but from the summit itself, from the man whose sneering comments, disreputable criticisms, and contradictory commands they once so supinely took. But out of the entire mass of data dealing with Hitlerian Germany come two significant answers that bear on the problem of prestige decisions. The first is that German leaders, and more especially the Führer himself, were gifted with prejudices that one might expect to find only among the most ignorant elements of German society. The second, that on the basis of these prejudices decisions were made that in the course of the war had a profound effect in hastening the German collapse, does

not concern us here, although the relationship between the two will sometimes be more than obvious.

We know that Hitler, like most national leaders everywhere, was given to exaggeration, to small emendations of the truth, in fact to lying, to further his own interests, and that the men around him either kept quiet and cherished dark thoughts like Halder, or objected and disappeared from the scene like Von Fritsch and Beck, or were pathetic mediocrities who little understood what was going on like Keitel, or were, like Von Ribbentrop, too avaricious for power to permit integrity to interfere with a complete surface acceptance of the Führer's views. But in the light of his immense power, Hitler's proclivities for exaggeration and dishonesty, when combined with anger or frustration, nevertheless could not conceal a hard core of ignorance and mean-mindedness. When it is granted that in public and to enemies, strangers, and a huge array of contact-men Hitler lied and exaggerated for reasons of state, there still remain the enigmatic—and endlessly repeated—views expressed in private. With respect to three of his World War II enemies—the British, Soviets, and Americans—Hitler's expressions are particularly instructive.

The British

"Our enemies are little worms," said Hitler on the eve of World War II. He had seen their leaders in strange circumstances at Munich and was confident that there was "no outstanding personality," "no masters, no men of action" in either England or France. Although Churchill's emergence as the British war leader caused Hitler to change his mind (and he remained particularly sensitive to the day of his suicide to the prime minister's barbs), he really was only reverting to an earlier view of the British. Occasionally, of course, after one British reverse or another, he remarked that he had been right after all,

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that the British were not "capable of making and carrying out lightning decisions."

But of all his enemies (and friends except for Mussolini the man), Hitler admired only the British. As far back as his writing of *Mein Kampf*, the Führer had laid down a basic principle of seeking an alliance (on his terms, of course) with Great Britain, contending at that time that Great Britain was Germany's "true" ally. It is inherent in his wartime remarks that he never really comprehended why Great Britain found his double-edged overtures unacceptable. Before the war, for instance, Hitler revealed to his Wehrmacht leaders what apparently was his true evaluation of the British:

The British themselves are proud, courageous, tenacious, firm in resistance, and gifted as organizers. They know how to exploit every new development. They have the love of adventure and bravery of the Nordic race.

Hitler found the German average in all these qualities "higher," but it is significant that the Führer applied such terms to no one else—at any time.

That the sycophants around Hitler could say repeatedly (and without contradiction) that the British were "tough" (Jodl), that "we know the British from the last war—and how tough they are" (Von Brauchitsch), that "the British are a tough people" (Von Ribbentrop), that "Britain is a tough enemy" (Keitel), and that war with Great Britain would be a "tough war" (Goering) merely reflected Hitler's own evaluation that "the English are a tough enemy." After the United States joined Great Britain in the western European and African conflict, Hitler constantly excused British shortcomings by sneering at American accomplishments. Even as late as the projected Allied invasion of *Festung Europa*, for instance, Hitler explained that Eisenhower's selec-

tion as commander in chief only showed that "the English are terribly clever." If the invasion failed, as of course Hitler expected, "the Americans will be responsible."

The explanation of Hitler's admiration of Great Britain apparently is to be found in his racial theories, in the British victory in World War I, and in the structure of the British Empire. Field Marshal Kesselring was only one of many of Hitler's guests to be surprised by the Führer's reaction to some comment on the British. In appraising the military achievements of the British in 1943, Kesselring was taken aback to hear Hitler remark: "Of course, they are a Germanic people too." Halder, Von Brauchitsch, Von Kleist, and others not too friendly to the Führer had similar experiences, while it was common for Jodl, Keitel, and Von Ribbentrop to be subjected to lectures on the "Nordic" and "Germanic" talents of the British.

If Hitler and his associates are to be believed (from documents contemporary to the events described), Hitler never envisioned war with the British. He wanted an alliance with them, he knew how "tough" they were from his own military experiences in World War I, and he was far more interested in an eastern adventure. Hence his instructions to Raeder were to build a fleet that would rule the Baltic, and Germany went into World War II "unprepared" to contest either the surface or underwater control of the Atlantic. If Hitler is to be believed, the complete military defeat of Great Britain and the partition of her empire was never his war aim. While hoping for Chamberlain's return to power at the head of a "peace party," Hitler planned the invasion of Russia as the only way of persuading the British to conclude peace, and he concurrently pushed the invasion plan for Great Britain only halfheartedly (not his usual practice). Even while ordering plans for the invasion of Great Britain, Hitler

stated that the British Empire was essential to "world equilibrium"; moreover, he noted, only the Japanese and Americans would at that time profit from partition.

The Russians

Compounded of a dual hatred of communism and Slavic blood, Hitler's evaluation of the Russians was more complex than his thoughts on the British. He raved about the Russians as "subhuman creatures" and dreamed of using Soviet lands as colonies for his German Nordics. Not only was the Crimea to be completely cleared of non-Germans, but he hoped one day to be able to drive from Berlin to the Urals without seeing a Slavic face. They would be pushed aside, kept unarmed, uneducated, and untrained except as slave laborers.

From his basic scorn of Russian blood flowed a stream of peculiar plans. Since "the Russians never invent anything," it was a safe bet that in destroying their factories (the "engineers, the machine tools" had all come from other countries), they could never "set them working again." They were unfit to wear German uniforms, or even to be armed in defense of the Reich. Their major cities, especially Leningrad, were to be "razed to the ground." The systematic extermination of what little Russian political intelligentsia the Führer recognized was to be carried out. There was to be no recognition of Ukrainian, Byelorussian, or Great Russian autonomy movements. Since in his estimation the Russians were fit only to be German slaves, a policy of conciliation, humanity, or even expediency was folly.

Added to his detestation of the Slavic peoples was Hitler's hatred of the Communist regime. Although he characterized Stalin as "one of the most extraordinary figures" in world history, Hitler concluded that it was as a "clerk" that Stalin had made his name. Stalin ruled from his "office," not from the rostrum, the battlefield,

or the chancellery as did Hitler. To this disapproval Hitler added the contempt of a born orator to a man owing "nothing to rhetoric." And yet, from time to time the Führer conceded Stalin's real and ruthless ability as a dictator, and as his own troubles with the German officer corps increased during the war he was often heard to say that Stalin had been "smart" to liquidate his generals before the war began—and that he, Hitler, should have done the same.

By the end of 1941 Hitler was implying that he had been unfairly tricked into invading Russia by the Finnish Campaign of 1939-40. He had so often criticized the Soviet Union's unwarranted prestige with reference to the Finnish conflict that when he found himself bogged down in the wastes of Soviet Russia he could only assume that the poor showing of the USSR against the Finns had been "a great piece of camouflage." To this extent, at any rate, Hitler evinced a grudging admiration for the Soviet dictator. But in the last analysis no amount of Soviet cleverness would save the USSR. Despite their "unconscious stubbornness" and "fanatical" leadership, the Soviet peasant army remained a potpourri of "subhuman brutes." Only through terror, that is, the infamous "Commissar Order," could they be brought into line.

It was when assessing Soviet inventive and productive capacities that Hitler erred most egregiously. On 3 February 1941 a memorable meeting took place between Hitler and his generals which illustrates the extent to which reputation can get in the way of facts. To complaints that the USSR had massive manpower reserves, Hitler retorted that "rapid and smashing successes" would bring down a Soviet regime "so hated by the Russian people." To the statement that the Soviet Army was materially well equipped (with at least 10,000 tanks), Hitler declared that "nobody with any spirit would allow him-

self to be impressed by such completely obsolete equipment." When it was suggested that accurate information on Soviet military production was unavailable, the Führer replied that he was "an unrivaled specialist" in such matters and a "far better judge" of them than any soldier. Moreover, he concluded, the Soviets lacked "any kind of technical ability." Unfortunately for Germany, events on every point proved Hitler wrong, and even Hitler later admitted to Guderian that had he believed Guderian's figures of Soviet tank production, he would not—he believed—"ever have started this war."

Toward the end of the war Hitler began to hark back to an old theme: that he and Germany were carrying out a European mission in preventing the Bolshevization of the world, that he was the leader destined to keep the Soviet Union's "Asiatic hordes" out of Europe. The Soviet was proving a formidable foe. Almost gone was the contempt for Soviet abilities, although there remained the hatred of Slavs and communism. So lost was he in a dream world of his own making that in 1945 he could interpret Roosevelt's death as a repeat performance of the "Miracle of the House of Brandenburg." This is a reference to the "miracle" that Elizabeth of Russia's death proved to be for Frederick the Great during the dark days of the Seven Years' War, 1756-1763. As Russia had done in 1762, the United States would drop out of the war, Great Britain would make peace, and Germany (was he thinking of himself as a second Frederick the Great?) would be free to fulfill her historic mission against the Soviet Union.

The Americans

The product of his contempt for racial mixing, Jewish influences, cultural decadence, and political stupidity, Hitler's attitude toward the Americans was virtually unalloyed by his admiration of the British and hatred of the Soviets. To begin with,

Hitler was so confident that the United States would not enter the war that he completely misread the shape of the future. He convinced himself that the Americans would remain neutral, not only in hopes of inheriting the British Empire, but because they had lost 10 billion dollars in World War I and had no desire to fight again. He believed that even should they perchance enter the war, their strength would take years to be felt; and, in addition, they were afraid of Japan.

As late as 5 March 1943 Hitler and his sycophants meeting in a formal staff conference denounced the Americans as having "no spirit, no inner pride," and as inferior to the British in every way. Always fond of denouncing the "Jewish clique" dominating Roosevelt, Hitler contended that he:

... could not for anything in the world, live in a country like the United States whose conceptions of life are inspired by the most grasping mercantilism and which does not love any of the loftiest expressions of human spirit such as music.

Everything about American society repelled Hitler. Half of it was "Judaized" and the other half "negroified," and he felt more akin to "any European country, no matter which," a considerable concession in view of his evaluations of the Russians, Romanians, Greeks, and other "subhuman" species "infecting" Europe. "I'll never believe," he once remarked, "that an American soldier can fight like a hero."

In terms of intelligence the Führer found "nobody stupider than the Americans"; their government was run "by Jews." Even their much vaunted industrial production was overrated, a reflection of which found itself in Goering's remark to Field Marshal Rommel that "the Americans only know how to make razor blades." Most fantastic of all, in view of American shipments of food, munitions, and war material to the British and the

USSR was the Führer's analysis of American agricultural production:

- *The farmers are terribly run down. I have seen photographs. You can't imagine anything as miserable and as degenerate as the farmers; a completely unrooted mob, wandering all over the place.*

This reference apparently refers to the American film, "Grapes of Wrath," which Hitler reportedly saw several times. Apart from its foolishness, it is indeed tragic that the leader of a nation which Henderson called "the most numerous, disciplined, and hard-working race in Europe" should base national policy on impressions gained from a Hollywood motion picture.

Hitler's assessments of his other enemies (the Poles, French, and Danes) and allies (the Italians, Romanians, and Hungarians) were equally fantastic. With the exception of a few individuals (Mussolini and Antonescu), Hitler believed them all to be subhuman and contemptible. With these "lesser" nations, moreover, Hitler's strength enabled him to smash them or cow them—so often and so effectively that he could assume with some assurance that his evaluation of them had been right all along.

Erroneous Evaluations

But with the British, Soviets, and Americans the problem was different. The Brit-

ish did not surrender in 1940; they did not break under the aerial blitzkrieg; their empire remained loyal; they were not to be "bought" at the Soviet's expense. Nor did Hitler find the Soviet Union the flabby and disloyal state he expected. Soviet leadership proved effective; Soviet military equipment was surprisingly good; Hitler did not enter Moscow in 1941 (or in 1942 or 1943 either) over the bodies of the "subhuman brutes" composing the Soviet armies; the Soviet will to fight did not collapse in the face of German *Schrecklichkeit*. Even more surprising to Hitler was the failure of the Americans to earn his "fullest contempt." American productive capacity was a vital factor in Germany's loss of the war; American democracy measured up to the task; American leadership was dangerous; and the Americans could and did fight "like heroes."

Although he inflicted grievous harm on all three, Hitler was never able to subjugate the British, Soviets, and Americans as he had confidently expected. Hitler's suicide and Germany's defeat both attest to the danger of dismissing one's enemies as "idiots" (and expecting them to behave like idiots) and of laying down national policy in terms of faulty prestige evaluations (and raving like a madman about "trickery" when these evaluations prove wrong).

Long or short, a war can end in only one of three ways. The enemy may surrender in place, in which case the Army must be there to accept that surrender and impose our will. Alternatively, he may try to run away, in which case only the Army can catch him, fix him, and destroy him. Finally, he may fight on to a finish as did Hitler. Here again, that finish can only be achieved on the ground, and our Army forces abroad today are the nucleus of the force which will do that job.

General Maxwell D. Taylor

Project Mass

A Modern Army Supply System

Lieutenant Colonel J. C. Coleman, Jr., *General Staff*
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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

PROJECT Mass is the forward look, the big change, and the streamlined procedures of the supply system to support atomic and hydrogen type warfare in the field. It introduces for the first time a completely new approach to Army supply—not a revision of existing methods. It presents revolutionary thinking on the part of logisticians and a concept in supply that has never been possible before.

The modern field army, with its increased mobility and firepower, demands and deserves a supply system compatible with it—a supply system that will support this new army in a manner that will complement its combat effectiveness. To accomplish this an entirely new supply system, especially designed for the purpose, has been developed under contract with the Army Logistics Research Group utilizing the latest Army techniques of electronic communications, air transportation, and Army field stock control which provides for selective stockage of fast

turnover items. This Modern Army Supply System has been approved by the Deputy Chief of Staff for Logistics for test beginning 1 July 1956; the test will be conducted under the name Project Mass. During the test period Project Mass will be limited to the supply of repair parts for the United States Seventh Army in Europe and detailed procedures will be provided in a Department of the Army regulation.

Maximum Service—Minimum Stock

Project Mass is the first concentrated and coordinated attack on all of the deficiencies of the Army supply system at the same time. There have been piecemeal efforts to improve various aspects of the system from time to time, but never before have all areas of supply such as requirements, requisitioning, transmission, stock control, procurement, storage, stockage, packing, shipping, inventories, transportation, communication, documentation, accounting, and reporting simultaneously come under such minute scrutiny for improvement. Such action is bound to bear fruit in a better Army supply system.

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developed, it will result in material savings in manpower, national resources, and time. These savings will result from reduction of large inventories at communications zone and army levels, cutting down the long pipelines filled with supplies, and shortening the present 120 or more days of order and shipping time. An undetermined dollar mark can be attached to each of these savings.

Science and technology has made it possible to accomplish this objective by the integrated use of the latest developed means of communication, data processing, and transportation. By transceiver communication a demand may be known in the United States instantaneously with it being expressed in Seventh Army. By this phenomenal means of requisitioning; by the depots mechanizing to the maximum operations in their stock control, storage, and shipping divisions; and by the method of transportation being utilized in accordance with the needs of the customer, Project *Mass* has set as a goal of attainment an order and shipping time of 20 days by water or 10 days by air as directed by Seventh Army.

Because of these revolutionary aspects of Project *Mass*, all persons engaged in supply activities are urged to accept the new concept with an open mind. Think of how it can and will work, not of why it cannot work. Be constructively critical?

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Yes, but not hardheaded or narrowminded about it. Give our supply system a chance to be its best. Do not evaluate or compare *Mass* with existing procedures or regulations; they were not limiting factors in the new design. Where conflicts exist, authority has been given to make the necessary exceptions to regulations.

Functional Activities

Under Project *Mass* there are six distinct levels or functional activities that will participate in the supply of an item. Three of these activities are within Seventh Army and three are within the continental United States (CONUS). They may be followed on the schematic drawing as the functions of each activity are briefly described.

Organizational Maintenance

Organizational maintenance includes all units, organic or separate, from the regimental level and below whose mission is to perform various types of maintenance; examples are lettered companies of a battalion or units attached to regimental headquarters for maintenance functions. A minimum stock of preselected, fast-moving repair parts, constituting a basic load, will be carried at this level to meet the unit's mission. No formal records for stock accountability will be carried at the organizational maintenance level.

Demands for replenishment of stocked parts and for supply of items not stocked will be made by the supply clerk writing the item desired on the new single line field stock control form. These single line requisitions will not be consolidated at this level, but will be hand carried from each individual unit to the direct support stock control point which is the next higher echelon of supply. The presentation of the single line requisition form by the organizational maintenance supply unit to the direct support unit will, within itself, constitute a justifiable requirement and an

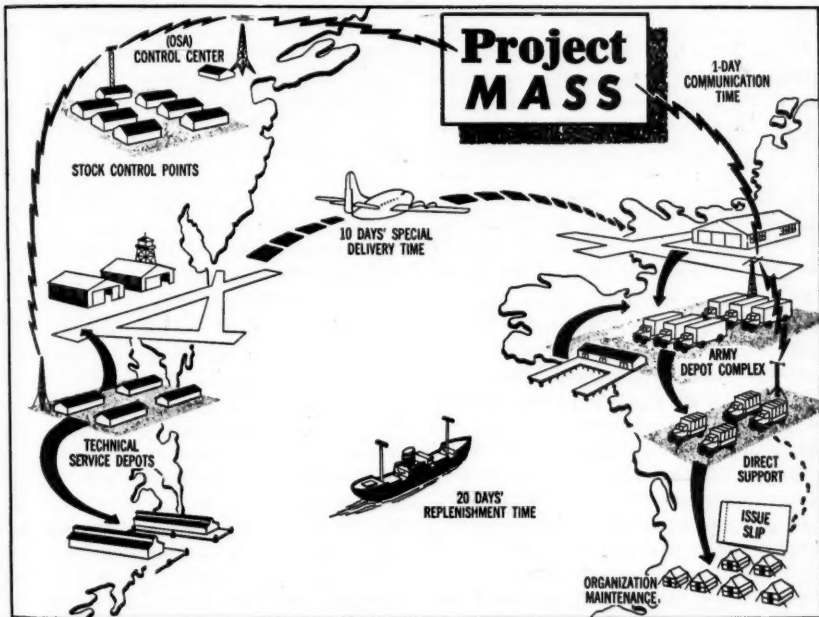
appropriate demand. No further justification, approval, or paperwork will be required. If the item is stocked at the direct support unit, it will be immediately issued.

Direct Support

Direct support which will normally be a unit at the divisional level, will consist of technical service units whose mission it is to provide higher level maintenance and to replenish repair parts to the or-

The same items will be stocked at this level as are stocked at the organizational maintenance level, plus a minimum number of insurance items. Stock control records will be maintained at this level to "manage" the stock, but not as accountable property records.

At the direct support level all data pertaining to the supply system—requisitions, stock control, shipping, receiving, accounting, and reporting—will be con-



ganizational maintenance units. Examples of direct support units are the engineer field maintenance company, the lettered companies of the ordnance battalion, and the ordnance direct support company. A minimum stock of repair parts will be carried at the direct support level to accomplish the mission of the unit and the items stocked at this level will be selected on the basis of usage experience, the criteria normally being 3 times in 180 days.

verted to punch cards. All necessary data will be recorded on these cards by a combination of numbers and letters. These punch cards embody a system of high-speed electronic transceiver communication and data processing—from this point on these data will remain in this same language.

Normal demands for the replenishment of stocked items and special demands for the supply of nonstocked items will be

transmitted by transceiver to the next higher supply echelon, the Seventh Army depot complex. This transmission will be accomplished twice daily. Cards are punched at any time a requirement becomes known for requisitioning items not stocked. For stocked items, a card is punched whenever the stock control record indicates the reorder point has been reached. There will be no waiting period for consolidation.

Army Depot

At the Seventh Army depot complex an additional stock will be carried to replenish the lower echelons and to support the heavy maintenance activities within the army. The items composing this stock will also be selected on a usage basis, using the same criteria as at the direct support level. This stock will consist of all the items stocked at the direct support level, plus a larger list of insurance items.

The stock at the Army depot complex will be a relatively small number of line items, estimated at about 50,000. In order that this drastically reduced number of line items be adequate, a reliable backup replenishment program must be assured from CONUS. This stock will fill about 85 percent of the demands. To fill the remaining 15 percent of the demands, a stock 10 times or more as large would be required. The extremely large number of slow-moving, seldom used items will be supplied from CONUS on an individual basis by premium service when and as required. Therein lies the application of the basic principle of *Project Mass* by substituting service for stock.

Stock control and accountable stock records will be maintained mechanically at the army level by a data processing unit. Transceiver cards received from the direct support units will be mechanically sorted into two groups—authorized stocked items and those items not authorized to be stocked. The system is designed so that

those items that are authorized to be stocked will be in stock or due in. This first group of cards is again mechanically processed against stock control balance cards. The old balance is adjusted by subtracting the current requirement and a new stock record balance card is given out by the machine. Warehouse number and bin location are reproduced into the requisition card and this group is then transmitted to the appropriate Seventh Army technical service depot that is being directed to fill the requisition. Army depots will fill requisitions on a daily basis, delivering the parts to the requisitioning units by courier, thus relieving the combat commanders from having to pick up items requisitioned.

The second group of cards, representing those items not authorized to be stocked in Seventh Army, known as "fringe items," will be transmitted daily by transceiver directly to the Oversea Supply Agency for filling from CONUS stocks.

Replenishment of stocked items will be initiated by Seventh Army by punching a card when stock control shows a predetermined reorder point has been reached. This reorder point will be a percentage of requisitioning objective, perhaps 60 to 75 percent, as experiences will dictate. The reorder point may vary for different items. These replenishment requisition cards will also be transmitted by transceiver directly to the Oversea Supply Agency for filling from CONUS stocks. Transmissions will be made daily and not held for consolidation.

Oversea Supply Agency

Transceiver cards representing normal demands for items stocked in Seventh Army and special demands for nonstocked items will be received daily in the Oversea Supply Agency which will serve as the CONUS National Control Center. From this agency demands for nonstocked items will be immediately retransmitted by trans-

ceiver to the appropriate technical service stock control point. Demands for replenishment items will be retransmitted, also by transceiver and within 2 hours' time, directly to the technical service distribution depot designated to support Project Mass.

The National Control Center will also perform stock control analysis and maintain statistical data for reports to the Deputy Chief of Staff for Logistics.

Stock Control Point in CONUS

Demands for fringe items received at the technical service stock control point will be mechanically reviewed by high-speed data processing machines for national availability.

If available within the supply system, they will be transmitted within 4 hours by transceiver to the appropriate depot for shipment. If the item is not available nationally, it will be immediately extracted to procurement for delivery by premium transportation to an aerial port for airlift to Seventh Army. In this instance procurement procedures will be simplified to the maximum within existing congressional laws.

The cards received at the technical service distribution depot for replenishment of items stocked in Seventh Army will be mechanically processed by reproducing a green card for picking stock and packing purposes and a set of red cards for shipping purposes. The respective colored sets of cards will be distributed so as to expedite storage and shipping functions, which will be completed within 2 working days. These technical service distribution depots will maintain a stock identical to that in the Seventh Army depot complex, plus additional insurance items. These depots will be in effect rear area supply points to Seventh Army moved from the communications zone to the United States.

Transportation

The Seventh Army Transportation Control Center will designate the time that items are required by the requisitioning unit which will be accomplished by a system of letter codes transmitted in the punch card requisition. This code will be perpetuated in all subsequent cards and distinctly marked on the cargo packages. It will be the responsibility of the CONUS activities to meet the target date established by the oversea command. The code will also permit the systematic and orderly handling of the cargo to reach the customer by the date required. The following three codes will be used:

Code 1—item needed when requisitioned, shipment to be by fastest available means.

Code 2—item for replenishment of fast-moving stock, shipment to be by expedited surface and marine express transportation. Domestic airlift may be used to meet port schedules.

Code 3—seasonal requirements, shipment to be by routine or normal methods.

Documentation will be simplified and streamlined by use of data processing machines and the punch cards prepared by the technical service depots. Maximum consolidation will be achieved through the use of containerization and palletization.

The Oversea Supply Agency, also serving as the National Movement Control Center, will control air tonnage allocation, release cargo into the aerial port, inform Seventh Army by items of cargo shipped, and receive acknowledgment of receipt of items from Seventh Army. All of these functions will be performed by high-speed electronic mechanical methods.

Project Mass will come into full growth by a process of evolution as certain types of highly specialized electronic equipment become available and are integrated into the system. The ultimate potential of such equipment may be even greater than is visualized today.

The Modern Army Supply System has as its underlying principle the stocking of items used most frequently with the organization that uses them, the stocking of less frequently used items farther to the rear, and the seldom used items being kept out of the combat zone until called for, then using premium service in communication and transportation to effect timely supply.

Conclusions

One thought is mandatory throughout Project *Mass*—maintain the constant combat readiness of the Seventh Army. This will be accomplished by the conventional supply system continuing to be operated concurrent with the *Mass* test. The conventional system will continue to supply all items except repair parts. While Project *Mass* is ironing out the bugs and should the test run into trouble for any reason, the conventional supply system

acts as an insurance factor and is available to go into action immediately to resume support of Seventh Army for repair parts.

Note that Project *Mass* reverses the old supply axiom that has stood for so many years—the impetus of supply must always be from the rear. Under the *Mass* concept the impetus is from the front as a vacuum draws the supplies forward from the rear.

Mass—the revolutionary Army supply system of the mid-twentieth century has been developed by Department of the Army and the Logistics Research Group, to be *responsive* to the needs of the combat commander; *flexible* to accommodate mobility; *dispersed* to minimize losses from enemy action; *efficient* to ease the drain on manpower and national resources; *effective* to ensure accomplishment of mission; *compatible* with joint operations concept; and *expandable* for support of small or large operations.

In the field of supply, our first objective must be to reduce the number of different things we attempt to supply. When we visualize the tactical and logistical difficulties of atomic warfare, one thing stands out clearly—we cannot attempt to supply so many kinds of weapons, so many kinds of ammunition for each weapon, and so many items of equipment which are nice to have but are not essential to victory. The essential is being strangled by the nonessential.

* * * * *

We have made great progress in recent years in our process of computation of requirements and are as far advanced in this science as anyone we know. The most important short-range objective in the field of requirements is to find a way to explain the process in layman's language and put an end to the wholly unjustified suspicion that requirements are rigged to support big budgets.

The first fact is that requirements are derived from the commitments laid upon the Army. The second fact is that the computed requirements represent 100 percent, or the maximum figure, which we seek to approach on the time schedules of total defense policy.

Lieutenant General Carter B. Magruder

New Fundamentals for Old?

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It was still quite far,
It was still like a toy attack—it was swallowed now
By a wood and came out larger with larger flags.
Their own guns on the crest were trying to break it up
—Smoking sand thrown into an ant-legged line—
But it still kept on—one fringe and another fringe
And another and—

He lost them all for a moment
In a dip of ground.

This is it, he thought with a parched
Mind. It's a big one. They must be yelling all right
Though you can't hear them. They're going to do it this time,
Do it or bust—you can tell from the way they come—
I hope to Christ that the batteries do their job—

—From Stephen Vincent Benet's description of Gettysburg in *John Brown's Body*,
published by Doubleday & Co., Copyright 1928.

AS THE last of Pickett's shattered brigades reeled back toward Seminary Ridge in the dusk of that July day, it was quite evident that the batteries had done their job. The old, tried team of infantry and artillery had struck a blow that is stamped in capitals upon our history. When one remembers the old sketches and Matthew Brady's splendid photographs, it is not too difficult to imagine the grimy, sweaty cannoneers in their undershirts, bent on their task of delivering that fire which is the mainstay of the defense.

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.
—The Editor.

Since the Civil War we have tested the capabilities of artillery in two major wars and three lesser arguments, all of which have reassured us of its dependability. However, if that were all that artillery had accomplished, we could well afford to relegate those observations to the historian and the barroom tactician. But, like the other arms, artillery has continued to improve its tactics and techniques as a result of its combat experience.

The lessons of the past have resulted in the establishment of our current doctrine which governs the employment of artillery in any type of action. This doctrine, as taught in service schools and prescribed in official publications, is ex-

In order to maintain flexibility in the mobile defense, artillery must depend in greater degree upon the maneuver of artillery units as well as the maneuver of their fires to enable it to accomplish its mission

pressed in the form of certain fundamentals. The use of the term "principles" has deliberately been avoided for the purposes of this discussion. It is felt that it is wiser to leave the latter word to its broader meaning as we use it in connection with the nine principles of war, principles whose meanings have not changed in centuries of warfare and whose application only has varied. In contrast, the fundamentals of employment of artillery have been subject to revision with the tactics of the supported arms.

In comparison with the intervals between wars prior to World War II, the flexibility of thought in our present Army is in a comparatively healthy state. This can probably be attributed to a number of influences, not the least of which have been battle-tested leadership, the uncertainties wrought by the everchanging strategy of "cold war," and the looming specter of atomic warfare. Experienced artillerymen believe that their arm has kept abreast of these present-day trends by remaining flexible in its approach to the adoption of entire new fields of weapons and the development of tactics and techniques which will ensure their proper employment in any future war. This thinking on tactical employment is constantly receiving expression in a number

of studies and exercises, the majority of which are too detailed to be considered here. Suffice it to say that all of the ramifications of the employment of artillery in future warfare have never been as widely explored as they have been since World War II.

In recent years most of the major problems which might be encountered by any arm on the battlefield of the future have been presented in one form or another by various authors, particularly in our military periodicals. Most of those areas of discussion have, of necessity, centered about tactical atomic warfare. These influences have certainly shared in bringing about the development of the concept for employment of the infantry division in the mobile defense. The impact of this concept upon artillery has, in the main, been realized only by those artillerymen who have been exposed to it in the search for sound doctrine which will provide infantry with the supporting fires it will require in this type of defense. While the problems facing the artilleryman are as varied as they are perplexing, they are not insoluble. However, the solution of these problems is of secondary interest here. The factor which is of primary importance is that a new concept can place certain limitations on the performance of artillery in its role as the greatest killer on the battlefield and that this, in turn, will affect the capabilities of the supported arms.

It is believed that the challenge presented to the artillery well justifies a complete analysis of its problems and their solutions so that the other arms will gain a thorough understanding of its capabilities and limitations when it is employed in the mobile defense. Before we enter into a detailed analysis of these problems it would be well to consider that in a future war we may oppose an enemy who possesses a great numerical superiority in artillery. It is a well-known

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fact that one of the major powers already possesses just such a strong artillery force which he has fully appreciated and exploited to the utmost. One can safely assume that our artillery will be numerically inferior in any war in Western Europe. Hence we are faced with the serious problem of the battle for fire superiority on those battlefields.

Attainment of Fire Superiority

The importance of the attainment of fire superiority will weigh more than ever in future warfare, and its importance has not always been fully realized. To bring it into focus, it is as essential as the gaining of air superiority. Without fire superiority our ground forces would be held immobile and could be pounded to pieces by a hostile artillery which has gained ascendancy over our own. How can we hope to compensate for our numerical inferiority in artillery pieces and ensure the supported arms the fire support they will require? Fortunately, the answers are forthcoming although all their implications must be fully understood before we reach a practical solution. Glib phrases alone will not provide the answers that must stand the test of the harsh realities of combat. First, we have developed techniques of massing artillery fires which permit us to react instantly to the desires of the force commander and to bring a tremendous volume of fire upon widely separated areas in a minimum of time. This aim has been accomplished by a system of fire direction which allows this massing of fires without the physical massing of artillery units.

Second, we must develop and maintain such a state of training in artillery units that we can react to any of the exigencies of atomic warfare. For example, we must be able to displace oftener and faster than we have in the past and with a greater degree of secrecy. In short, the ability of artillery to "shoot, move, and communi-

cate" will be challenged to a greater degree than ever, and the key to the attainment and preservation of this state of training is skilled leadership. All of this is easy to say but, of course, difficult in the doing. However, the problem must be faced and the solutions found and tested.

Third, if we enter into a state of active atomic war—that is, with both sides employing or having employed atomic weapons—we can certainly expect our artillery to use its atomic capabilities to offset the numerical superiority of the enemy in conventional artillery. True, if the enemy is employing atomic weapons, we can expect him to use them against our artillery also. But here, we are probably better prepared to disperse and survive owing to the development of the techniques previously mentioned.

All of this discussion should not be construed to mean that atomic artillery and atomic weapons in general will replace our guns and howitzers firing high explosive—certainly not, for the fires of those guns and howitzers will be needed against targets which have not been destroyed by atomic weapons or which do not justify attack with atomic weapons. More important, there will be many targets which cannot be attacked with atomic weapons and many which are more efficiently and economically attacked with high explosive ammunition than with atomic weapons.

Let us now consider the solution of these problems from the viewpoint of an established base, that is, the fundamentals which govern the employment of artillery in defensive action. Obviously, if one could blindly apply these rules to the problem, the discussion would end here. However, it must be remembered that these fundamentals were developed from our experience in battle and were based upon supporting infantry units in the position defense. At the other extreme,

it would not be wise to discard them simply because we are faced with the problem of applying them in a different type of defense. Hence it would appear logical to analyze these fundamentals in the light of their application to the mobile defense.

Analysis of the requirements for artillery support in the mobile defense reveals that there are three major areas of consideration: the support of the strong points of the forward defensive area; the support of the battle position in depth; and the support of the striking force.

Forward Defensive Strong Points

The first requirement to be fulfilled by artillery in support of a position defense is the support of the general outpost. The fundamental doctrine developed as a result of experience in World War II sought generally to represent *all* calibers which are found in support of the battle position in the artillery supporting the general outpost, and to provide close and continuous support to those security forces.

The mobile defense concept does not envision that the division will furnish a general outpost but rather that, if one is to be employed, it may be furnished by the mobile covering force which is supplied by corps or higher echelon. If a general outpost is not furnished by the mobile covering force, the strong points of the forward defensive area may be required to perform the functions of a general outpost in addition to their other missions. Therefore, it follows that it must be determined whether or not the fundamentals governing the employment of artillery in support of the general outpost can be applied in the support of these forward strong points.

It appears that it may not always be possible to represent *all* calibers. The artillery supporting the forward defensive area must, of course, occupy positions relatively far forward in comparison with

the remainder of the artillery in the battle position. Hence it will be more exposed to attack in early stages of the action. Self-propelled artillery is more suitable than towed artillery for employment in this particular phase. This consideration will eliminate certain types of towed artillery—hence the assertion that it may not always be possible to represent *all* calibers. However, every effort should be made to represent as many as possible.

It would be well at this point to call attention to that element which deals the artilleryman a severe headache in any phase of the mobile defense. That is the great distances between infantry strong points and the lack of security for artillery units which must seek positions in this vast sea of open space which stretches in every direction. In all probability, artillery will be the only means of fire support operating in areas which are beyond the range of weapons organic to the infantry regiment and which are placed within infantry strong points. The preceding considerations have presented the negative side of the support of the forward defensive area. There is one bright side—all of the artillery in the battle position can and should be so placed that all fires can be placed in front of the forward strong points from *initial* positions.

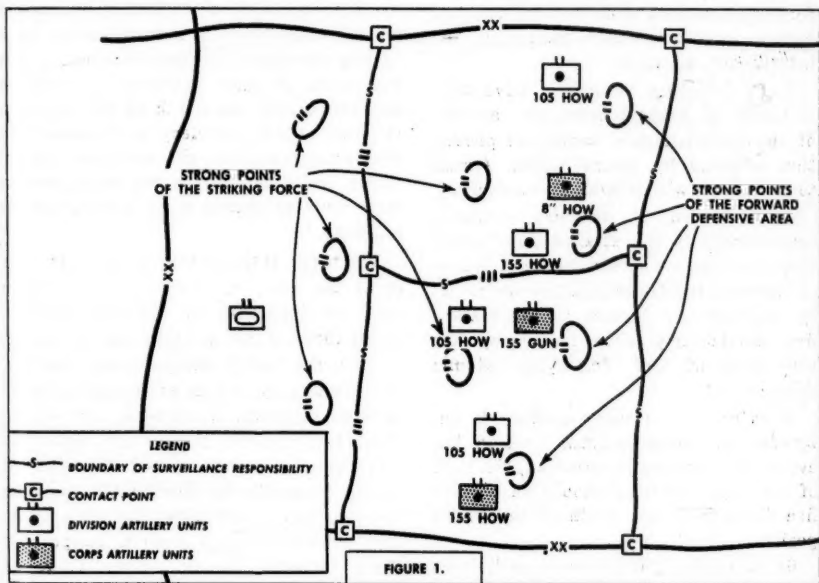
The second fundamental to be considered is that of providing close and continuous support to the forward defensive area strong points. This can be done without attaching artillery as was often the rule in the position defense when the general outpost was too distant from the battle position for centralized control. In the mobile defense all of the artillery supporting the forward defensive area can be positioned within the battle position and should, therefore, be retained under centralized control to the highest possible degree. When distances become too great, it may be necessary to decentralize the control of some artillery. An effective

means of accomplishing this would be the formation of artillery battalion groups or composite artillery battalions, the composition of which will vary with the amount and types of available artillery. However, the use of this tactic should not place a limitation on the amount and types of artillery to be employed in the forward area.

In the beginning of this discussion the

within certain specified areas of surveillance. The boundary of surveillance responsibility limits a specific area in which a unit is charged with the responsibility for reconnaissance and reporting the presence of the enemy; normally when the infantry division assumes a mobile defense the unit charged with responsibility for an area of surveillance will be the regiment.

It will be noted that light, medium, and



requirement for gaining and maintaining fire superiority was emphasized. It is essential that medium and heavy artillery units be well forward at this stage of the action so that they can engage enemy artillery when it first opens fire and thus destroy or neutralize that artillery which we cannot attack with atomic weapons. Figure 1 portrays schematically an infantry division in a typical organization for a mobile defense. The contact points referred to are those points on the ground at which contact is made between friendly units engaged in providing surveillance

heavy artillery units are present and are well forward in order to exploit their ranges. This organization will enable some heavy artillery to furnish counterbattery, and harassing and interdiction fires in early stages of the action in consonance with the necessity for gaining fire superiority over the hostile artillery. Heavy artillery is so disposed laterally that its fire capabilities cover the greatest possible frontage. It is obvious that all of the artillery shown will be capable of furnishing close support to the forward defensive area strong points.

Remainder of Battle Position

Basically, there are six fundamentals which govern the positioning of artillery in the defense:

1. Artillery is echeloned in depth in order that continuous supporting fire may be provided in the event that an enemy penetration neutralizes the position areas of the forward artillery units.

2. Some artillery units are placed in forward positions to accomplish counterbattery and long-range harassing and interdiction missions.

3. In selecting positions, advantage is taken of natural defensive features of the terrain and of incidental protection afforded by reserve units. Access to routes of withdrawal is considered.

4. Dispersion of artillery positions consistent with the attainment of effective fire support is sought as a means of limiting the neutralization of friendly artillery by hostile counterbattery fire, particularly when the enemy has the capability of employing atomic weapons.

5. In order to provide continuous defensive and counterattack fires in the event of an enemy penetration, the bulk of the light artillery should be able to fire throughout the depth of the battle position.

6. All of the light and medium division artillery must be able to fire immediately in front of the main line of resistance.

Careful study of these fundamentals indicates that all except the last two can be applied to the mobile defense without modification. Focusing our attention on these two, let us see how, if at all, they can be applied. It is certainly true that we wish to enable the bulk of the light artillery to fire throughout the depth of the battle position. Artillery which is positioned deeper within the battle position can then take over the fires of forward artillery units which have been forced to displace by enemy penetration. By so po-

sitioning our artillery, we lessen the need for displacement of an unwarranted number of artillery units at any one time. It must be remembered that artillery on the move is not shooting artillery. In the position defense this goal could normally be attained with little or no displacement of artillery units. But when one compares the great depth of a mobile defense to that of the position defense, it becomes readily apparent that this fundamental must be modified in that we shall have to rely on controlled and coordinated displacement of some artillery in order to fire throughout the depth of the position. In other words, artillery must depend in greater degree upon the maneuver of artillery units as well as the maneuver of their fires to enable it to accomplish its mission.

The other fundamental in question concerns the close-in protective fires which must be furnished by division artillery. Since there is not a main line of resistance in the mobile defense, can this fundamental apply to fires placed immediately in front of forward defensive area strong points? It appears that it can, with certain reservations. As stated previously it should normally be practicable to place the artillery supporting the division so that all of it could fire in support of these forward strong points from its *initial* positions. The jokers in the deck are the forced displacement of artillery units by enemy action or the engagement of artillery in close combat to protect its positions. Some of the fires of these artillery units would be lost to some strong points. This means that added emphasis must be placed on the need for centralized control so that the fires of certain artillery units can be shifted to replace the fires of units which have been forced to displace. Other artillery units may be forced to defend themselves against sudden, unexpected attacks by enemy infantry and armor. If these artillery units

should become seriously engaged in a fight for survival, they will be forced to abandon their primary mission until they can move out of danger. Thus their fires may be lost for some period of time.

Figure 2 is based upon the same situation as Figure 1 and shows all of the artillery supporting the battle position. Here, the following has been accomplished:

Artillery is echeloned in depth; all

livered in close support of the striking force to destroy the enemy penetration and to prevent his reinforcing the penetrated area. Although these fundamentals can be applied, the following points are worthy of note:

Artillery must be furnished to the striking force in a direct support role and an amount of artillery appropriate to the situation must be furnished to

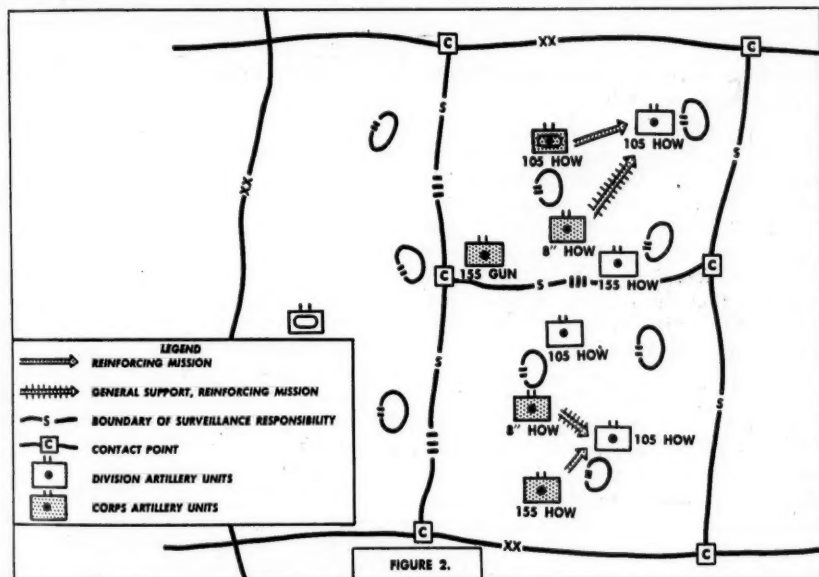


FIGURE 2.

of the artillery can fire in support of the forward area strong points; some artillery is in forward positions to accomplish long-range fires; and a maximum dispersion of artillery units, consistent with the situation, has been obtained.

Support of the Striking Force

There are no significant changes in the application of fundamental doctrine for the support of counterattacking forces. As in the position defense, artillery fires in support of the counterattack are de-

reinforce the fires of the direct support battalion.

The division artillery commander is responsible for the planning and execution of artillery fire support of the striking force. When the infantry division is employed in the mobile defense, this planning should normally be accomplished at division artillery level.

It is doubtful that the organic division artillery is sufficient to furnish adequate support to one or more counterattacks and simultaneously continue to

support strong points which are under attack. When a corps artillery group is attached to the division or has been assigned the mission of reinforcing the division artillery, it may be delegated the task of planning artillery support of the striking force (submitting the fire support plans to division artillery for approval) and/or controlling artillery which is reinforcing the direct support battalion of the striking force. It must be borne in mind that in any phases of planning or execution the division artillery commander retains over-all responsibility and control.

Figure 3 illustrates a typical organization of the artillery with the division to support a striking force. A light battalion has been diverted from a mission of reinforcing to that of direct support of the striking force. That light battalion's fires will be reinforced by two battalions, as shown, so that the striking force will be supported by three battalions; one light, one medium, and one heavy.

Massing of Fires

While we have considered the fundamentals of employment and the three general areas in which their application is affected, let us not neglect the several other considerations which are of interest to the supported arm. Perhaps the most important of these is the massing of artillery fires. The division frontages which we may expect to encounter in the mobile defense will generally preclude the massing of nonatomic artillery fires of more than one division artillery battalion on critical areas. Reinforcement by corps artillery units will increase massing to some extent but not in the magnitude to which we have become accustomed. Hence infantry commanders can no longer expect the division artillery to furnish massed fires in the degree which characterized its support in World War II and Korea.

Another area of interest which has

aroused considerable discussion pro and con is that of the selection of artillery position areas. One school of thought has advocated the positioning of artillery units within, or immediately adjacent to, infantry strong points. The reason set forth for this is to provide security for artillery against attack by hostile ground action. This is an ideal solution when one considers the security of artillery units to be of paramount importance. However, it should be conceded that this is not necessarily in consonance with the primary mission of field artillery—to support infantry and armor by neutralizing or destroying with fire those targets most likely to hinder the accomplishment of their missions.

In order to provide the artillery fires which will protect the strong points, the artillery must be able to mass its fires. This the artillery cannot do unless its freedom of action is retained, and to do so it must select positions from which it can best accomplish its missions. This necessitates deploying artillery units where they can most effectively accomplish this task rather than limiting their ability to do so by placing them within infantry perimeters.

Major Limitations on Movement

While the necessity for the maneuver of artillery units has been stressed, it is equally important to realize the limitations which may be placed upon movement. These major limitations are:

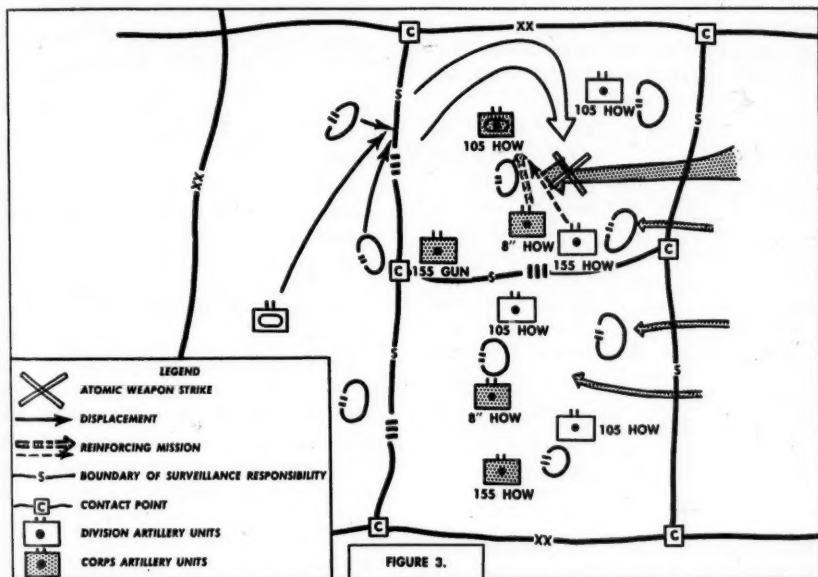
Enemy ground action.—In addition to direct attacks by enemy infantry and armor, one must consider guerrilla, airborne, and infiltrating action. While these types of action are a deterrent at any time, they are, of course, a far greater threat during the hours of darkness.

Local air superiority.—It must be borne in mind that one of the criteria which favor adoption of the mobile defense is that the air situation will per-

mit the relatively free movement of friendly forces. However, if the enemy should regain local air superiority for any reasonable length of time, our daylight movements would be seriously curtailed if not prohibited.

Lack of protection from supported units.—Security afforded by strong points will only be incidental if we wish artillery to seek positions from

only solution to this dilemma appears to be a highly centralized system of control and a high degree of careful planning. Artillery, as the major fire support element, is the force commander's quickest means of influencing the action. Hence artillery will require a high, if not the highest, priority for road movement. Since we have considered the necessity for an increase in the maneuver of artillery



which it can maintain its freedom of action. It appears that artillery, in the majority of situations, will not be able to depend upon surveillance and reconnaissance elements of the supported arms for protection or even early warning of the threat of enemy ground action.

In view of the foregoing it is apparent that artillery may not be able to move at night as it has in other types of action. On the other hand, if the enemy should gain air superiority, our movement by day would be seriously restricted. The

units, it is evident that artillery requirements for priority of movement will also increase in the mobile defense.

Throughout the discussion the need for centralization of control has been emphasized. It can readily be seen that centralization is essential in the maneuver of artillery fires and artillery units. Naturally, any system of control must depend upon communications. Herein lies, perhaps, our greatest potential weakness. In view of the extended frontage and depths we may expect to encounter in the mobile defense, it may well become an impossi-

bility for artillery headquarters to install and maintain wire communications, at least outside of artillery battalion position areas. Therefore, artillery must place reliance upon radio for communication between headquarters higher than battalion, to supported units, and to its observers. However, we must remain increasingly aware of the limitations of radio communication. We know that we can expect to face an enemy who will possess a formidable capability for jamming. Thus a definite requirement exists for dependable long-range radio equipment of a type that will be least susceptible to jamming.

Another problem in the mobile defense which may prove to be the least explored from an artillery viewpoint is that of logistics. Probably the greatest problem to be encountered here is the supply of artillery ammunition. The limitations which may be placed upon movement seriously affect this very important item. It is an oft-quoted axiom that the only reserve of artillery is its ammunition. Certainly it is its only means for influencing combat. Apparently, serious thought must be given to the development of a reliable means of aerial resupply through the use of helicopters or convertiplanes.

Conclusions

This brief study has attempted to present the major problems which confront the artilleryman when he seeks the answer to the best means of furnishing adequate support to infantry in its concept of mobile defense. These can be summarized in the following:

In general the fundamentals of employment of artillery in the defense can be applied to the mobile defense. There are several which will require modification for application to the mobile defense. The basic fundamentals of artillery employment should be applied in any case with judgment and commonsense.

It is imperative that our artillery gain ascendancy over the hostile artillery, otherwise the enemy may be enabled to immobilize and neutralize our infantry through the use of conventional artillery alone.

The frontages which may be encountered in the mobile defense will preclude the division artillery furnishing the degree of massed artillery fires which has characterized its support in the past.

Artillery must continue to select positions from which it can best accomplish its missions. The primary requirement of any artillery position is that it permits the accomplishment of the assigned mission.

Although artillery has an increased requirement for the maneuver of its units, it may be faced with serious limitations in its movements. Careful planning and a centralized system of movement control appear to be the only answer to the problem.

The centralized control of the maneuver of artillery fires and units which is so essential in the mobile defense is dependent upon adequate and dependable communications. Wire communication cannot be maintained outside of artillery battalion position areas. Therefore, a requirement exists for dependable long-range radio equipment.

A reliable means of resupply for artillery ammunition must be developed. Aerial means may provide a satisfactory solution.

Artillery continues to fulfill its role as the primary means of fire support available to the force commander. When new tactical concepts are introduced by the supported arms, they will continue to afford a challenge to the flexibility of thought and the skill of the artilleryman if he is to maintain the prestige of a proud corps which has never failed to accomplish its mission.

MILITARY POTENTIAL OF COMMUNIST POLAND

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE importance of contemporary Poland stems perhaps less from the size of her territory and population than from her geographic location, athwart the historical invasion route across northern continental Europe. In this latter capacity the country will play a key role in any future conflict or settlement between East and West. Therefore, Communist Poland should be known. However, this article will cover only a narrow portion of this vast subject field, namely the dominant influence of the USSR on the Polish Army and the application of the Soviet political pattern to Poland.

The principal policies of the Polish Communists in the field of national defense in 1955 were rearmament and the political education of the soldiers in the armed forces. Polish popular reactions to these policies cannot be ascertained but are probably negative. Since the puppet government's intention is to stand side by side with the Soviet Union, the attitude of the

population would probably hinge upon its feelings regarding the USSR. The fact that officers are being recruited from among the working and peasant classes provides considerable social opportunities for individuals from these strata. This could contribute to bringing about a feeling of gratitude and allegiance to the present Polish Communist Government on the part of these individuals themselves as well as their friends and relatives.

The law on the current 6-Year Plan (1950-55) specifically provides for a considerable expansion in the defensive power of Poland by means of an increase in the general productive potential and the development of a special defense industry. This same law expresses its preoccupation with improving military indoctrination and supplies:

In order to raise the ideological level of our military cadres, it is necessary to train them in the principles of Marxism and Leninism, [encourage them to] read and study the teachings of Stalin, and assimilate the Soviet science and art of warfare.

It is necessary for the [Army] command to strengthen the directorate of the Army's supply organization and for the [Communist] Party to strengthen the Army's

The aim of the USSR is obviously to transform the Polish soldier ideologically into a being similar to the Soviet soldier, to whom the Pole is bound by a vast network of military alliances and political influences

political indoctrination program [with better personnel].

The individual responsible for the political education in all military units is the deputy commander. He directs the activities of both the Polish United Workers' (Communist) Party and the Union of Polish (Communist) Youth organizations in the army. Party members are considered to be the real center of Party-political work among the enlisted men. A special military-political academy has been established to train officers for political indoctrination work in the armed forces.

The basic duties of a Polish soldier are incorporated in his oath of allegiance. In the middle of 1950 the legislature passed a law introducing a new version of the military oath which is notable for its lack of any reference to God. The new text speaks only of allegiance to *people's Poland* and the preservation of peace by standing indomitably *beside the Soviet Army and the other allied armies*. The basic training manual entitled *Regulations for Internal Service in the Polish Army* was announced by National Defense Minister, former USSR Marshal (until he was "loaned" to Poland in 1949) Konstantin Rokossovski in early 1950. It is admittedly copied from that in use by the Soviet armed forces.

Political Education

Political education of the youth is also conducted in preparation for military serv-

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ice by means of a paramilitary organization called *Service to Poland*. Established by law, membership in this organization is compulsory for boys and girls above the age of 16. Despite the emphasis on political indoctrination, *no real evidence has been uncovered* to indicate that USSR authorities in 1955 considered the Polish armed forces reliable in a war with the West. The Soviets may, however, possibly feel that control over the Polish Army is sufficiently tight to ensure its useability as rear echelon units.

Soviet-Sponsored Forces

The original Soviet-sponsored Polish Army was recruited from among those Poles taken to the Soviet Union during the period of the Hitler-Stalin pact of 1939-41 (estimated at almost 1.7 million persons). While these Poles survived forced labor and the genocide of certain elements, especially Polish officers, they were not able to join the Polish units organized by Lieutenant General Wladyslaw Anders. The Anders' army was evacuated from the southern part of the Soviet Union in early 1943 by the British to fight Axis forces in North Africa and later in Italy.

The Polish troops which fought the Germans on the Eastern Front were commanded by Colonel Zygmunt Berling who had served as a regular Polish Army officer prior to 1939. He led these Soviet-sponsored forces from their inception in May 1943 until the time when the Communist-controlled Polish Committee of National Liberation installed itself at Lublin in July 1944. At this time command passed into the hands of Michal Rola-Zymierski, a former Polish general removed from the army in 1927 and sentenced to prison for embezzlement. Rola-Zymierski was subsequently made a marshal and head of the National Defense Department in the Communist government of Poland. He was in turn replaced early in November 1949 in both positions by the USSR's Rokossovski.

The latter is not the first Soviet officer to have held a high position in the Soviet-sponsored Polish armed forces. In order to give a semblance of legality to the infiltration of Russians into the Polish Army during World War II, the presidium of the USSR Supreme Soviet in the middle of 1944 granted by decree to Soviet citizens the privilege of formally renouncing their USSR allegiance and applying for Polish citizenship. At one time there are reported to have been up to 40 generals and 15,000 other Soviet officers in the Polish Army.

Three Percent of Population

The people's army of Poland is based upon compulsory military service and reportedly numbers approximately 750,000 men in time of peace, which is almost 3 percent of the total population. Only a small fraction of this number is probably in the regular army, while the remainder consists of security forces and quasi-military units. About 235,000 youths reach military age each year.

The chairman of the State Council is supreme commander of the national armed forces, according to the 1952 constitution. In time of war he appoints a commander in chief who is nominated by the National Defense Minister. In reality, this is only a facade, and there is no civilian control exercised over the Polish Army, not even by the Communist government. The *de facto* power in military affairs most certainly is wielded not by Aleksander Zawadzki (chairman of the State Council since 1952) but by National Defense Minister, Marshal Rokossovski, who in turn receives directives from Moscow.

Responsibilities

The Ministry of National Defense in Poland is nominally responsible for all problems connected with the defense of the state. These are in general concerned with planning, organization, and disposition of troops during peace and war. In-

cluded are universal military training and reserve training as well as planning and supervision over military schooling and political education work for all officers, noncommissioned officers, and enlisted men. Other aspects involve training in tactics, research toward improving weapons and technical equipment, and also exploitation of scientific and technological achievements for national defense. No less important are the supervision over the sanitary and veterinary services, supply and equipment for troops, and the preparation of reserves in personnel.

The top echelon organization of the National Defense Ministry includes a minister, four deputies, a General Staff, and a Main Political-Education Board. The National Defense Minister issues all orders and directives. The First Deputy directs the general activities connected with education in citizenship and politics as well as morale of troops. He is also Chief of the General Staff. The latter body is responsible for all problems concerned with planning for defense, schooling higher level commanders and staffs, and preparation of adequately trained scientific and research personnel. It coordinates the work of different categories of troops, establishes and transmits operational and tactical fundamentals of doctrine to those preparing military literature, and studies the exploitation of scientific and technological achievements for the needs of the armed forces.

The responsibilities of the Second Deputy Minister are in the fields of organization and training. The Third Deputy heads the Main Political-Education Board and directs the entire political education system in all branches of the armed forces. The Fourth Deputy Minister "for rear services" holds the position of quartermaster general. His work pertains to supplies of food, uniforms and finances, sanitary and veterinary problems, and quarters and military construction.

As already indicated, the Third Deputy Minister for National Defense is concurrently chief of the Main Political-Education Board of the Polish armed forces (GZPWP). Principal directives for the activities of GZPWP are formulated by the Communist Party, and the board functions as the military section of the Party's Secretariat. Liaison between the army and the Party is effected through Brigadier General Kazimierz Witaszewski who is currently the Third Deputy Defense Minister and a member of the Party Central Committee.

Political Administrations

Subordinate to the Main Political-Education Board are the political administrations for the various branches of the armed services and the military district commanders. These in turn are superior to Party commissions in each armed forces division. The latter were established in early 1951 upon the "demand" of division conferences.

The next level in the organization of the political education system comprises the primary Party organizations in the individual regiments. Such cells are directed by trained Party secretaries, who are also officers, with the military rank of deputy regimental commander. Each secretary is assisted by a Party committee, subdivided into sections and staffed with propaganda instructors. These men participate in maneuvers, give lectures, and their task is to set an example in discipline and training.

Still lower organizational units for political indoctrination are to be found on the battalion and company levels. Officers in charge of this work, especially on the company level, have closer contact with their men than is true of the higher echelons. They perform their activities in person, having as aides noncommissioned officers who are trained in special courses as agitators.

The agitator is supposed to approach

the rank and file soldiers as a comrade and not as a superior. The political education he attempts to instill is supposed to be conducted in the form of persuasion and not by means of military commands. Special dossiers are maintained by the political officer in charge of each company, and they are a repository for reports on all enlisted men and officers. These reports are periodically brought up to date by the agitators. Thus each soldier undergoes individual molding in the required form and framework.

The training of political officers takes place in three different types of schools: basic, advanced, and academic. The lowest level of political training is provided by the Main School for Political Officers at Lodz. This course lasts 2 full years, and graduates are qualified to work at company level. They receive military training together with the political schooling. Advanced training takes place at the Higher School for Political Officers in Rembertów near Warsaw. Graduating classes are assigned to battalions.

Military-Political Academy

The Military-Political Academy, named after Feliks Dzierzhinski (a Polish nobleman by birth, he was founder and first head of the Bolshevik secret police, the *Cheka*, now called the Soviet Ministry of Internal Affairs (MVD)) was established in Warsaw by the Polish Communist Party's Central Committee and is avowedly patterned after the "Lenin" Military-Political Academy in Moscow. The statute of the "Dzierzhinski" Academy in Poland defines its tasks as being:

... the training and preparation of officers for posts in the armed forces, which require higher military and political studies, and for scientific work in the field of Marxist-Leninist military and political knowledge.

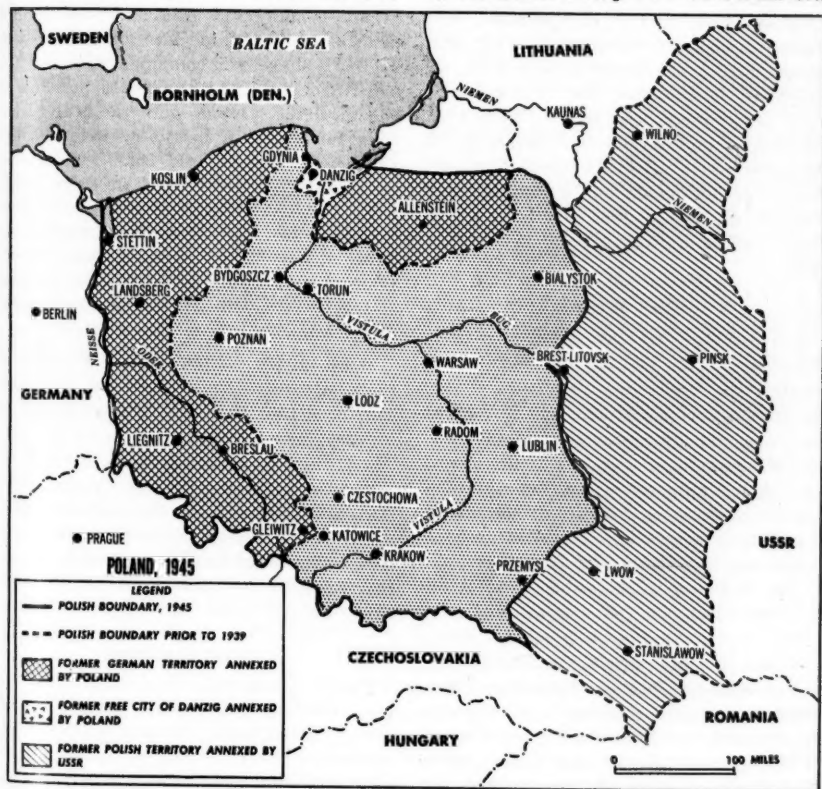
The academy in Warsaw is under the over-all supervision of the Ministry for

National Defense but is directly administered by the Main Political-Education Board of the Polish armed forces.

In addition to having the prerequisites for entrance to a university, candidates for admission to the "Dzerzhinski" Military-Political Academy must be regular commissioned army officers who have been

at the academy, were made plain by Brigadier General Marian Naszkowski (at the time head of the Main Political-Education Board) in a speech to trainees at the academy:

... basing ourselves on the experience of the Soviet Army ... we should con-



graduated from an officer candidates' school. In some cases of an exceptional nature, individuals undergoing universal military training are permitted to enter the academy. However, such candidates must pledge to enter the regular army as a career upon graduation from the academy.

The tasks of political officers, schooled

stantly be perfecting methods for shaping the political consciousness of our troops, deepening patriotism and internationalism ... arousing hatred for the enemy forces of imperialism, arousing revolutionary vigilance. . . .

The aim is obviously to transform the

Polish soldier ideologically into a being similar to the Soviet soldier, to whom the Pole is bound by a network of military alliances.

The most important treaties of a strategic nature to which Poland has become a party are with the Soviet Union as well as with the other people's democracies. Treaties of friendship, collaboration, and mutual assistance were negotiated and signed during the postwar period on an individual basis with: the USSR on 21 April 1945; Yugoslavia on 18 March 1946 [denounced unilaterally by Poland on 29 September 1949 after the Cominform action]; Czechoslovakia on 10 March 1947; Bulgaria on 29 May 1948; Hungary on 18 June 1948; and Romania on 26 January 1949.

Similar Treaties

None of these treaties differ in essence from any of the others, and each incorporates the following principles: close cooperation; consultation on important questions and international relations; collaboration against German or other aggression; ban on alliances or coalitions directed against a treaty partner; strengthening of political, economic, and cultural ties; implementation of the treaty in the spirit of the United Nations; and duration of 20 years.

Not one of the treaties makes direct reference to any specific article of the United Nations Charter. There is no provision for pacific settlement of disputes and no link mentioned with the United Nations organization as such. For these reasons the treaties should probably be considered as part of a regional security system under the provisions of Article 51 of the United Nations Charter rather than as bilateral instruments—the more so, since each of the satellites is in turn bound to the USSR by a similar pact. Until recently there was also no over-all treaty to which more than two of these Commu-

nist states were signatories at the same time.

Poland has also signed agreements with the Soviet Union concerning direct railroad transportation between the USSR and East Germany, civil aeronautics, and a USSR treaty to supply Poland with arms. The agreement on division of reparations from Germany (16 August 1945) should also be mentioned, in view of the fact that Poland's share was combined with that of the USSR and amounted to 15 percent of the total the Soviets were to receive. On that same date a boundary demarcation agreement was entered into by the two countries. It was modified in early 1951, when the USSR obtained a strip of territory including the railroad connection between Lwow (Lemberg) and Kowel in return for an equal area of land around Ustrzyki Dolne in the Carpathian Mountains' foothills.

Poles in general make good troops, and their morale is excellent when they are convinced that they are fighting for their country. The emotional factor of patriotism plays a considerable part in their attitude toward war. This was proved during World War II by the strong Polish underground movement loyal to the London Government-in-Exile as well as by the record of the Polish units that fought openly on all fronts against the Germans.

Popular Sentiment

Popular sentiment on the part of the overwhelming majority of the population was at that time on the side of the Western allies. The Communists realize this in all probability and, therefore, are making attempts to identify West German border revisionist claims with the United States and Great Britain, thus hoping to reduce sentiment in favor of the Western Powers. The Polish population as a whole is probably in favor of keeping the lands obtained unilaterally from the Germans with Soviet support. It is perhaps safe to as-

sume that if the West openly were to announce its support of the territorial claims made by the West German Government at Bonn, many Poles would fight willingly on the side of the Soviet Union in a war with the West.

On the other hand, the stress in Poland's official propaganda on alleged American aims in rearming Germany for the specific purpose of marching into the Polish "Recovered Territories" (between the 1939 border and the Oder-Neisse Line) may indicate the strength of popular sentiment in favor of the West and the fervent hope in eventual deliverance by United States arms from Communist rule. The government apparently feels that the best means for creating distrust of the United States is to keep alive the issue of the Oder-Neisse boundary, an issue on which most Poles are probably in agreement.

The attitudes of the present Communist regime and of the Polish people thus pos-

sibly coincide as of 1955 in being definitely against war at the present time. Both would presumably be satisfied if they could keep the lands gained from Germany and have a period of peace in which to develop the country in the direction of industrialization. The older people remember only too well the staggering losses of World War II, which accounted for over 6 million dead, almost one-sixth of the total pre-1939 population. It is significant as a measure of the attitude of the Polish people toward war that the League of Soldiers' Friends, a civilian organization, could claim only 40,000 members 6 years after it had been established. The youth, however, for the most part probably do not remember the war years or have quickly forgotten their childhood experiences and are possibly less averse to war. It must be kept in mind that the Communists in Poland as of 1955 have already had 11 years in which to mold a new generation.

Grave injustices are still uncorrected. We must not, by any sanction of ours, help to perpetuate these wrongs. I have particularly in mind the oppressive division of the German people, the bondage of millions elsewhere, and the exclusion of Japan from United Nations membership. We shall keep these injustices in the forefront of human consciousness and seek to maintain the pressure of world opinion to right these vast wrongs in the interest both of justice and secure peace.

* * * * *

Because peace is the keystone of our national policy, our defense program emphasizes an effective flexible type of power calculated to deter or repulse any aggression and to preserve the peace. Short of war, we have never had military strength better adapted to our needs with improved readiness for emergency use. The maintenance of this strong military capability for the indefinite future will continue to call for a large share of our national budget. Our military programs must meet the needs of today. To build less would expose the Nation to aggression.

President Dwight D. Eisenhower

Combat Mobility With Army Aircraft

Colonel Wayne E. Downing, *Corps of Engineers*
Commanding Officer, 30th Engineer Group (Topographical Survey)

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE Army is responsible for moving its own troops, and their supplies and equipment within the combat zone. To date, such movement has been mostly confined to surface means.

In event that atomic weapons are employed by adversaries in warfare of the future, the presenting of profitable targets to atomic missiles must be avoided. Troop units and supply dumps will be small and widely dispersed. The combat zone will be deep and supplies far to the rear. Infiltrating enemy forces and areas contaminated by radioactive material can be expected to deny surface travel to both combat and supply elements. Distances involved and the "open" nature of the battlefield will require greatly increased speed of movement. Mobility will also be demanded in those situations in which atomic weapons are not employed in order to improve the flexibility and striking power of Army forces. Fortunately, the requirement for the Army to take to the air will, in itself, produce increased speed.

The Army has its own conventional aircraft capable of operating from roads and small, unimproved strips. It also has helicopters which require no prepared landing areas and which are capable of rapid movement of troops and supplies. These requirements engender several basic questions: Can the Army move and supply itself throughout the battlefield entirely

by air, without elaborate, advance preparation of airfields? Is the development of aircraft, particularly helicopters, sufficiently advanced so that they can be kept in operation without prohibitive time out for maintenance? How many and what types of aircraft does the Army need, and what are the tactics and techniques for their employment?

The answers to the last question were explored in Exercises *Bluebolt* and *Follow Me* and, on a larger scale, in Exercise *Sagebrush*. For answers to the first two questions, defense planners can gain encouragement from the experiences of the 30th Engineer Group (Topographic Survey). During the past 6 summer seasons the 30th Engineers have surveyed over 313,000 square miles of western and northern Alaska, from the Aleutians to the Arctic Ocean. As the area surveyed is devoid of roads and glacier-covered mountains and muskeg bogs make surface travel next to impossible, the engineers relied entirely on aircraft. The analogy between expected future combat conditions and the employment of aircraft by the engineers in Alaska is too obvious to be ignored.

The 1955 Alaskan Survey Project, which involved the survey of 88,000 square miles of wilderness north of the Arctic Circle, is used here as an illustration, since it was accomplished under the most difficult terrain and weather conditions. Throughout the operation the principle was followed of moving as much as possible, as far as possible, by the most economical means of transportation.

More than 700 personnel, 47 helicopters, and 633 tons of general cargo were shipped by water from San Francisco to ports in Alaska. An escort type aircraft carrier

transported the helicopters and a major portion of the personnel and cargo. The helicopters were flown aboard at the Alameda Naval Air Station, and off the carrier at Anchorage, Alaska.

From the ports of debarkation, the Alaskan Railroad was utilized to its northern terminus at Fairbanks and Ladd Air Force Base.

Giant C-124 cargo aircraft of the Alaskan Air Command, in turn, carried the surveyors and their equipment to two airfields near the areas to be surveyed. At the latter bases, headquarters of the survey battalion, of the group aviation, and of the three survey companies were established. The large cargo aircraft were also used for regular delivery of petroleum, oil, and lubricants (POL), rations, and other supplies to the two base camps, but from there on the engineers were on their own.

Nineteen airplanes assigned to the survey group were flown overland via Great Falls, Montana, and the Alaskan Highway, through Canada. The Army aircraft utilized by the 30th Engineer Group included:

L-23 airplane, command, <i>Twin-Bonanza</i>	1
U-1 airplane, utility, <i>Otter</i>	6
L-20 airplane, utility, <i>Beaver</i>	6
L-19 airplane, observation, <i>Bird Dog</i> ..	6
H-19 helicopter, utility	7
H-23 helicopter, reconnaissance	40
—	—
Total	66

Canadian border, there is an airfield that will accommodate C-124 aircraft. One platoon, with all equipment, was flown there by the Air Force direct from Ladd Air Force Base. There was also a short, unimproved dirt strip where another platoon was established, but with these exceptions there were no other prepared landing areas in all of the vast territory to be surveyed.

Use of Planes

Adhering to the "as much as possible, as far as possible, as cheaply as possible" policy, the utility airplanes, *Otters* and *Beavers*, were used to carry the surveyors and their instruments, tentage, POL, rations, stoves, and other gear to platoon camps. They were also used during the operation for resupply of the field camps, and for the transportation of mail and command and supervisory personnel between base and field camps.

The airplanes were landed on gravel bars along the rivers, or equipped with wheel-ski combination and operated from the ice on lakes. When the ice melted, pontons replaced skis on some of the planes. When large quantities of POL were needed at field camps an Army Quartermaster paradrop unit furnished by United States Army, Alaska, and Air Force C-124 *Globemasters* dropped sixty-four 55-gallon drums at a time. The parachutes and containers were returned by Army helicopter to the nearest landing area suitable for conventional aircraft.

Good results were also obtained in drop-

As proved by tests in Alaska, it is feasible and practical to move and support troops in the field solely by Army aircraft thus freeing combat unit commanders from their former dependency on surface travel

Nine platoon sites, each with from 35 to 50 men, were established throughout the area at distances that averaged 75 miles from the base camps. At one of the latter sites, on the Arctic coast near the

ping smaller quantities of supplies from Army airplanes. Free drops of 55-gallon drums of POL were frequently made with consistent success. The cargo door was removed on one side of the plane and skids

installed on the floor. The airplanes were flown low enough so that the drums were still moving forward when they struck the surface. The mechanic-crew chief of the airplane pushed the drum out on command from the pilot.

That workhorse of the artillery spotters during the Korean conflict, the *L-19* observation plane, was utilized for a wide variety of tasks. It carried personnel and cargo when the load did not warrant use of the larger utility planes and, due to its light weight, was used first on skis and later on floats to reconnoiter lakes as possible landing sites for the larger craft. The *L-19* was ideal for carrying a surveyor performing "classification" work which consists of flying back and forth over the area, annotating aerial photographs as to the type of vegetation and surface materials represented on each. Oblique photographs with a hand-held camera were taken of prominent terrain features and settlements. All such data are needed by the cartographer who compiles the final map.

Helicopters

The 3-place, reconnaissance helicopter was the primary vehicle used to move the surveyors and their instruments from point to point. A typical load for the small helicopter included the pilot, 2 surveyors,

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sleeping bags and emergency rations for all 3, an extra 5-gallon can of gasoline, theodolite, tripod, AN/PRC-10 (walkie-talkie) radio, and target cloth and stakes. Such loads frequently reached and sometimes exceeded 600 pounds, yet the helicopter operated satisfactorily up to 5,000 feet. With the pilot, 1 passenger, and 100 pounds of equipment they have been utilized on mountain peaks as high as 7,000 feet.

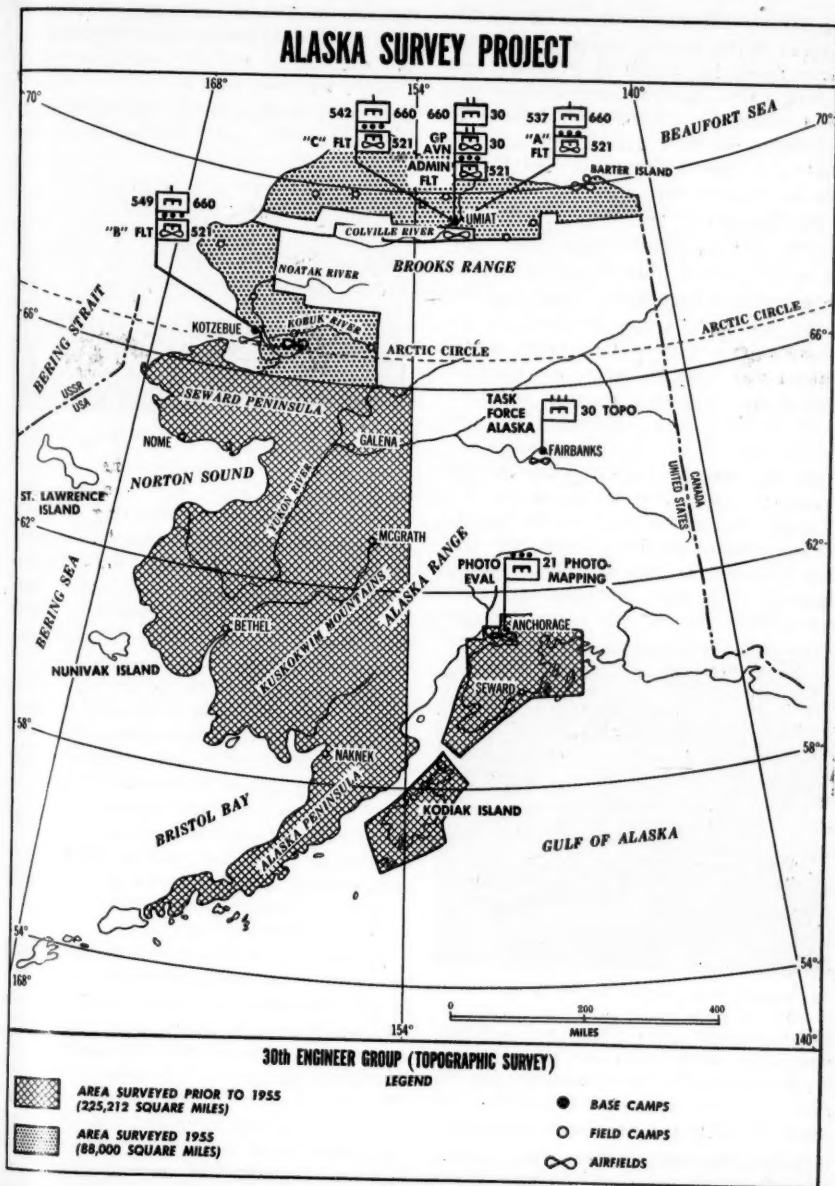
The reconnaissance helicopters were kept and maintained in the field at the platoon camp sites. They were flown back to the base camp only for major inspections, at the end of 300 hours of operation.

The *H-19* helicopter lived up to its utility designation in many ways. During the "spring" thaw, which takes place during June and early July on the Arctic slope, the utility helicopters were used to maintain the flow of supplies to locations where the deteriorating ice on lakes, or high water covering river gravel bars, temporarily prevented the landing of fixed-wing aircraft.

In order to extend the range of the *H-23* reconnaissance helicopters, the *H-19* was used throughout the season to establish small dumps of POL at distances up to 50 miles from the platoon camps. When more than two surveyors were needed for a particular task, the larger helicopter was invaluable. It was also used to establish and resupply small camps at the extreme limits of the platoon areas in those cases where there were no suitable landing sites for fixed-wing airplanes.

The ability of helicopters to operate without prepared landing areas has long been generally appreciated. Of equal significance, in judging the ability of the Army to rely on its own resources, is the independence of helicopters in fog and other periods of reduced visibility.

Weather conditions worse than that experienced on the Arctic slope of Alaska would be difficult to locate. Cold air mov-



ing in over the Tundra from off the ice-covered Arctic Ocean, immediately to the north, forms fog almost daily. In the area around Point Barrow, records show that cloud ceilings are 1,000 feet or lower 58 percent of the time during July and August, and that visibility is less than 1 mile at least 20 percent of the time.

The summer of 1955 was no exception, and the 30th Engineer Group relied heavily on helicopters when the other aircraft were grounded by weather. Small, portable radio "homing" beacons powered by 2½-kilowatt generators were operated at each platoon site. Each helicopter was equipped with a low frequency receiver and manually-operated loop antenna. The well-meant advice to "fly low and slow," reportedly given to Captain Eddie Rickenbacker by his mother during World War I, finally was put to good use by the helicopter pilots of the 30th. Doing just that, they managed to keep the platoon camps supplied with mail, rations, and emergency quantities of POL over the most featureless terrain and in the world's



Surveyor's gear loaded on H-23 helicopter.

worst weather. Also, when low visibility prevented taking readings with the surveyors' theodolites, reconnaissance for further survey control points was pushed forward by using the small H-23 helicopter.

Accomplishment of the survey project, as well as the lives of the men in the

field who had to be periodically resupplied with food, depended on uninterrupted aviation support. Accordingly, whenever maintenance was necessary on an aircraft, the mechanics worked around the clock until the aircraft was again flyable. One Army aviator was assigned the responsibility



The L-20 is used for transporting supplies.

of making a daily, detailed inspection of each plane to assist the mechanic-crew chief in detecting and correcting incipient failures before they developed into more serious difficulties. Actually, the blades or propeller would hardly stop before both the officer and crew chief would be cleaning, inspecting, adjusting, and lubricating the machine.

The result of such devoted pilot-mechanic maintenance is heartening to those who might be concerned about the reliability of present-day Army aircraft. The 30th performed both organizational and field echelons of maintenance while in Alaska, yet an over-all daily average availability of 84 percent was maintained for the season. Fixed-wing airplane availability was 78 percent, and that of helicopters, 86 percent.

During the Alaskan project there was no supporting depot to make extra aircraft available as replacements while regularly assigned planes were undergoing extensive repair or major inspections, as would be the case in a combat situation. Nor was the 1955 project a case of living off the fat of new aircraft for most planes had been used on one or two previous Alaskan projects. The average daily avail-

ability was as good or better at the end of the project as during the middle of the season. Within 25 days after returning from Alaska, 30 of the aircraft, including



Otter equipped with ski-wheel combination.

18 helicopters, were flown more than 2,000 miles to Fort Polk, Louisiana, and there continued in operation throughout Exercise *Sagebrush*.

Minimum Essentials

Nothing can hamper air support operations more seriously than insufficient spare parts. The engineers take with them to Alaska enough parts and supplies, including both organizational and field maintenance items, to last through the season.

Considering the number and variety of replacement items authorized for 66 aircraft, including 6 different types, it was almost as important to limit such supplies to minimum essentials as it was to have the required parts on hand, when needed. Each mechanic kept a daily record of all parts and supplies he installed or used on his plane. The length of time each major item was in service before replacement became necessary, and the reason for replacement was also recorded. From such records, the 30th knew how many and which parts to take along, and which it could safely turn in as not needed. Information copies of the parts consumption data were furnished to Department of the

Army aircraft supply and maintenance agencies.

Conclusions

Over a 6-year period the 30th Engineer Group has proved that:

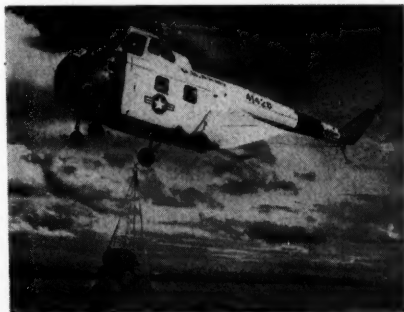
It is entirely feasible and practical to move and support troops in the field solely by Army aircraft.

The six types of aircraft utilized are safe, dependable, and capable of operating where there are few, if any, prepared landing fields.

Even without backup echelons of supply and maintenance being present in the overseas theater, it is possible to maintain a high average daily availability rate of all types of Army aircraft, over extended periods of time.

Supply of ammunition and the movement of heavy weapons and greater numbers of troops would be required in combat, but helicopters with far greater capacity than those employed by the surveyors are already in use.

Judging from the success of the topographic engineers in Alaska, combat unit



POL delivered by H-19 utility helicopter.

commanders are justified in depending on Army aircraft to increase mobility and to free them from their former dependency on surface travel.

Operations Research in the Army

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

IN THE early nineteenth century Von Clausewitz made a staff study to determine the best combination of the three arms—Infantry, Artillery, and Cavalry. In his book, *On War*, he wrote:

If we could form a comparative estimate of the cost of organizing, provisioning, and maintaining each of the three arms, and furthermore an estimate of the service rendered by each in war, we should obtain a definite result which would express abstractly the best combination. But this is little more than a play of the imagination.

This may well be the first formal recognition of a requirement for operations research (OR).

One of the earliest formal attempts to solve military problems with OR techniques has been traced to a British aeronautical scientist, F. W. Lanchester. His book, *Aircraft in Warfare*, contained a new theory relating combat effectiveness to numerical strength and firepower. However, it was not until World War II that any organized effort was made to apply OR methods to military problems. The Allied effort to increase the effectiveness of the forces and weapons available during the critical periods of the war provided the needed impetus. Small groups

of scientists were attached first to British and later¹ to United States operational commands; there is no evidence of Germany using OR. The British and United States mission was to bring scientific methods to bear on urgent tactical and technical problems. Their activities marked the beginning of what is now known as operations research and furnish many examples of its successful application. Only a few of the most striking OR examples are outlined here.

British Experience

The OR groups worked effectively on various tactical and technical problems in all major British commands. Their efforts for the anti-aircraft and fighter commands on the operation and deployment of anti-aircraft equipment in Great Britain doubled the effectiveness of the air defense system. The return was out of all proportion to the amount of effort spent on the research and was largely responsible for the outcome of the Battle of Britain.

Comparable but less spectacular successes were scored by the OR teams with the British 21st Army Group in the field. For example, a tank casualty study provided the first accurate data on the proper distribution of armor on tanks fighting in close country.

In another case an analysis of a large number of British antitank actions in the Ardennes salient resulted in a determination of the degree of superiority of the self-propelled over the towed antitank guns, and of antitank positions with in-

fantry protection over those without infantry protection.

United States Experience

British successes largely influenced the United States to follow suit. The pattern used generally resembled that of the British forces. The Navy established the first formal organization in the United States early in 1942. One of the many contributions was the development of the tactics and techniques which resulted in the successful blockade of the Japanese harbors with aerial planted mines. Other contributions resulted in significantly improved aerial search techniques for enemy surface ships and submarines.

Starting late in 1942 the Army Air Force had, by V-J Day, 17 different OR sections with one either functioning in or on order for every combat air force. These groups studied technical problems—bombs and fuses—as well as tactical problems—bombing accuracy and battle damage. During the period of one group's work at the Ninth Bomber Command, for example, the bombing efficiency of the command improved manifold.

Established in 1948

OR never took root in the Army Ground Forces which made only a token effort to apply the techniques in the Pacific near the end of the war. A formal organization,

In the light of the contributions previously made, the continuing requirements for its use, and the promise for the future, operations research has an important role to play in the Army in peace and war

Operations Research Office (ORO), was first established in 1948. Thus the other services had a 6-year lead on the Army in this field.

No two OR studies are alike; however, certain guiding principles generally apply to its work:

1. OR uses all existing pertinent avail-

able information, but develops essential information which is lacking. Existing data relating to the problem are extracted and utilized in conjunction with original information developed by the OR team. In some cases the only original work involved may be a synthesis of other studies.

2. Past military operations are analyzed as a basis for improving future operations. An analysis of the combat performance of an existing military weapons system is the first step in determining the requirement for an improved system.

3. Every attempt is made to correlate results by alternate, independent means. In some cases as many as three sets of data are used: namely, combat data, field tests, and laboratory tests.

4. The quantitative rather than the qualitative approach is used. This is the essence of the scientific method. The performance and effectiveness of various components of the system are determined and expressed numerically.

5. The system approach is used. The technical service is generally concerned with the mechanical functioning of its equipment. The user is concerned primarily with its operational characteristics. On the other hand, the OR team is concerned with the performance of the system as a whole embracing the soldier,

his equipment, and his tactical environment.

The function called "operations research" by the Army is called "operations evaluation" by the Navy; "operations analysis" by the Air Force; and "weapons systems evaluation" by the Department of Defense; however, all OR agencies

have certain common attributes. They provide a service to responsible commanders and staffs who retain the ultimate responsibility for the decision made. Their studies generally present the quantitative, scientific aspects of the problem. The decision maker must consider and weigh these aspects along with all other significant factors. For example, the political implications and the effects on civilian morale might override the strictly analytical solution which provided no air defense for a nonindustrial metropolis such as Washington, D. C. This service to the Army is by no means a usurpation of military command and staff responsibility.

Approaching the Problem

It is now appropriate to provide some insight into what goes on in the "ivory tower," to show how the researcher approaches a problem. Depending on the nature of the problem, the following steps are generally involved:

1. Formulation and delineation of the problem. This includes defining the scope of the problem and determining the major considerations involved.
2. Formulation of an appropriate military situation and assumptions.
3. Collection, charting, and analysis of all existing data related to the problem.
4. Making the scientific analysis and synthesis which involves the use of whatever techniques are most suitable for

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the solution of the problem. Among the foremost of these are the theories of probability and statistics. This step also includes determination of appropriate measures of value or effectiveness on which to base the results and the determination of the effects of varying assumptions and operational conditions.

5. Formulation of appropriate conclusions and recommendations.

6. Presentation of the results to the military.

Complexion of an OR Group

What kind of people belong to an operations research group? On the whole the group has a broad base of practical and theoretical experience. It is composed of scientists from universities and industries, some of whom helped develop the atom bomb, radar, and guided missiles. A large organization such as ORO includes physicists, engineers, logisticians, political scientists, economists, sociologists, psychologists, astronomers, and mathematicians, to mention just a few of the professions. It is of interest to note that the majority of the personnel of this organization have had military service.

The successful analyst has the scientific point of view with a flair for the practical, down to earth approach. He has imagination, but he is interested in solving real action problems as distinguished from academic problems. He has a feel for hardware without the gadgeteering instinct. He may be naive about a new military problem, but he has the capacity to grasp the fundamentals in a short time. Finally he is adaptable to working harmoniously with the military.

It costs the Government about \$20,000 annually to support one analyst, including his salary, technical and administrative support, overhead, and travel. It has been estimated that over 1,000 civilian scientific personnel are engaged in OR work in the United States at an annual cost to the Government of about 20 million dollars.

Responsibilities and Relationships

The degree of success achieved by the civilian operations analysts in serving the military depends largely on the degree of mutual understanding, consultation, and cooperation attained. This is not easy because of their wide differences in background, training, and experience; their differing responsibilities; and their differing points of view. The scientist is cautious and skeptical by nature and will not commit himself until all the facts are available. The officer who must make recommendations or decisions based on the best available information is often impatient with the scientific approach. Morse and Kimball stated in *Methods of Operations Research*:

Fundamentally, the problem is to convince the administrator that the scientist can help him make his decisions more effectively and wisely and to convince the scientist that the executive is still the one to make the basic decisions.

To Be Fully Effective

In order for OR to be fully effective it is necessary that the Army has an appreciation of its general nature as well as its capabilities and limitations. It is also the responsibility of the Army to provide this organization with:

1. Up-to-date information on Army plans, programs, and policies which might result in a requirement for future studies.
2. Complete background information, data, and reports available to the Army and which are pertinent to assigned projects.
3. Vigorous and effective general supervision of the OR program to include the assignment and approval of projects, establishment of project priorities, periodic review of the work program, and the prompt evaluation and distribution of OR publications.

4. Constructive criticisms of OR work.

In the discharge of these responsibilities, it is essential that no attempt be made to tell the OR group *how* to conduct its study or to influence its conclusions and recommendations.

The responsibilities of the OR group are of equal importance. Its primary responsibility is to perform impartially and objectively and to produce sound reports leading to improved Army operations. It is also incumbent upon the OR agency to;

1. Become thoroughly familiar at first hand with all the pertinent military aspects of the assigned problem.
2. Translate its studies into language which simply and clearly shows the values, costs, and effects of a proposed course of action.

3. Keep the Army fully advised of the status of its current program and its capability to undertake new work.

In discharging these responsibilities the operations analyst, according to the director of ORO, "should avoid lobbying for his recommendations or criticizing the performance of any military individuals or organizations lest he lose his welcome as a member of the team."

Joint Responsibilities

In addition there are certain joint responsibilities entailed in OR. The formulation of a new project requires the maximum degree of teamwork. The Army officer should bring his military experience and judgment to bear in helping formulate the problem, the military situation, and assumptions. The scientist should outline the scientific considerations and general nature of the required analysis. Each problem assigned and undertaken by the OR group should be based on a mutual understanding of the following factors: the nature and scope of the problem, the relative importance of the study to the Army, the probable susceptibility of the problem to solution, the approximate time

required for completion, and the impact of the proposed study on the current OR program.

The need for teamwork does not end here, however. In the course of the study it is essential that there be close and continuous consultation. On the one hand this keeps the Army advised of the progress of the study, and on the other it provides needed military guidance.

Requirements

The requirements for OR are best seen in the light of the current world situation. The free world has limited resources and manpower in relation to the regimented military potential of the Soviet bloc. The Soviet game, in a protracted cold war, appears to be one whose aim is to overtax the free world, thus forcing its economic collapse.

At the present time the biggest slice of all United States governmental expenditures is for national security. In such a situation the Nation is properly concerned with the continuing cost of national defense. In this connection, the Chairman of the Joint Chiefs of Staff, Admiral Radford, stated that our current objective in security planning is to develop "an armed posture which can be supported year in and year out on a long-term basis; not just 1 year, or 2 years, but for 10 years or even 20 years if necessary."

Fundamental Problems

Thus the services are unavoidably confronted with the following fundamental problems:

1. How to achieve maximum military results with a minimum of men, money, and materials.
2. How to utilize our industrial, technological, and scientific superiority to overcome our deficits in manpower.

The solutions to these problems are becoming increasingly more difficult because of the nature of future warfare. Plans for

a future war will be complicated by the increased political and economic implications of military problems due to our global commitments and to the competing demands for limited resources, by the increased complexity of military operations and equipment, and by the revolutionary pace in weapons development.

The array of new weapons poses the difficult problems of determining their impact on conventional weapons systems. There are also the problems of anticipating the tactical effects of weapons which have not yet been combat-tested. These new weapons may have a revolutionary effect on future organization, tactics, logistics, and strategy. Yet the development pace has left these problems largely unresolved.

Personnel Limitations

The average military planner or policymaker is seriously limited in dealing with these problems without outside assistance. These limitations result from the nature of his job, his training, and military tradition. With respect to his job he is overloaded with "crash" programs primarily related to day-to-day problems. Thus he has very little time left for the creative work required to deal with broad, long-range problems. By the time he has become familiar with his routine work he is due for reassignment. In his position as a participant in the action involved and biased by his own interests and limited experience, he is unlikely to render an impartial, objective judgment.

With respect to his training, he generally lacks the scientific experience required for operations research. Furthermore the concept of obtaining maximum results with minimum costs is strange to him because of the lack of economy motivation in war.

Perhaps the most serious limitation is traditional: it is human nature to protect existing devices with which one is

familiar and to resist any innovation which would change the order of things. The classic military example of this, according to a distinguished historian, involves the strenuous efforts made by Admiral (then Lieutenant) Sims in the early twentieth century to introduce continuous aimed fire into the United States Navy. The system was first devised and successfully used by the British in 1898. It was introduced into the United States Navy several years later over the most strenuous opposition of the Bureau of Ordnance and the Navy Department and only after appeal to President Theodore Roosevelt.

Morrison, in his book, *A Case History of Innovation*, states:

The appeal to Roosevelt is documentation for Mahan's great generalization that no military service should or can undertake to reform itself. It must seek assistance from outside.

In short, it is beyond the capacity of the military alone to solve the array of complex problems with which it is faced. These problems require the concerted efforts of all available talent which can be brought to bear effectively—military personnel as well as specially trained civilian scientists.

Application

With the foregoing problems and military limitations in mind, it is pertinent to inquire as to what OR has to offer. The organization, composed of personnel with scientific training, is specially equipped to handle complex problems objectively. The broad background and experience of the entire group permit it to cover the economic and political as well as the military aspects of a problem. Removed from the military command and staff channels and not bound by military regulations, standing operating procedure, traditions, and customs OR personnel can provide a fresh approach to military prob-

lems. Freed from the pressure of daily routine, they can devote their time to long-term problems with maximum continuity of effort.

In outlining the need for the "new look," Admiral Radford said in effect that one has to approach the problem in a realistic, deliberate, and systematic manner, avoiding the temptations of day-to-day expediences, and pursuing instead reasoned, intelligent, and long-term judgments. This is precisely the kind of product which the OR organization has to offer.

Army Agencies

The principal agencies in the Army which are formally engaged in OR work are the ORO, and groups supporting several of the technical services.

The ORO is by far the most significant of these from the standpoint of its technical strength, budget, and output which greatly exceed the combined totals of all the other agencies. The broad mission assigned ORO provides extreme latitude in selection of areas of study which include not only problems that are of common interest to several branches of the Army but also those which concern more than one service, such as air defense.

The OR groups which support the technical services are relatively limited in the size and scope of activities. They deal primarily with specialized problems related to their respective technical service missions. Their research programs include weapons and equipment system studies from an engineering viewpoint, determination of desirable characteristics for new weapons and equipment, and technical feasibility studies.

It is worthy to note that ORO is a nongovernmental, university-administered agency, while some of the technical service agencies are integrated into the corps which they serve and have civil service status. The nongovernmental organization is the preferred arrangement since it provides:

1. Maximum objectivity in its work because of its independent status.

2. Maximum flexibility because of its divorce from day-to-day problems.

3. Increased attractiveness as a career outside of civil service.

The only significant advantage derived from the integrated unit is the ensurance of the closest possible working relations between the military and the civilians.

Capabilities

In view of the broad nature of the work it is not possible to define precisely the problem areas in which OR is best equipped to operate; however, experience to date provides some insight into general areas and types of problems which are within OR capabilities.

OR techniques have been applied with varying degrees of success in three broad areas: technical, tactical, and strategic. Technical studies include weapons and equipment analysis to determine their performance and means of improvement. Tactical studies involve the determination of expected operational results with varying tactics. Strategic studies include such problems as the determination of the cost in national resources of achieving certain strategic objectives. There is no sharp line of demarcation between these areas, as any one may well involve several or all of these aspects.

In general OR has been very successful in the solving of discrete technical and tactical problems. In these cases ample quantitative data were available and the individual operations repetitive and relatively simple. The more complex the problem and the greater the number of non-quantitative aspects involved, the less chance it has for success. Thus purely technical studies are more amenable to solution than tactical studies, and both far more so than broad strategic studies.

OR techniques have been successfully

applied to the solution of the following general types of problems in recent years:

1. Determination of the operational requirements for, and the military characteristics of, new weapons and equipment.

2. Cost and effectiveness studies which involve the determination of the relative costs in men, money, and materials to achieve desired results with competitive weapons systems and aim to ensure that research and development effort is placed on the most promising weapons, instead of being dissipated across the board.

3. Weapons and equipment tests. These include assistance to testing agencies in the design of tests, their conduct, and the subsequent evaluation of the results.

4. The tactical employment of new weapons systems. These studies relate to the performance of new weapons, appropriate tactical use of these weapons, and their impact on existing organization and tactics.

5. Economic and logistic studies which involve determination of the impact of weapons production on national resources, the costs at various production rates, and related logistics problems.

The above list of examples is by no means complete, but it is representative of the capabilities of a large organization with a broad charter such as ORO.

Limitations

The probability that any given study undertaken will provide recommendations leading to significant improvements in Army operations is very low. Perhaps 1 out of 10 studies will result in an important payoff. This is due to a variety of factors which are discussed later.

In general it is inherently difficult to program OR work precisely to meet Army requirements because of fluctuations in Army needs for research studies, the un-

certainties associated with any kind of research work, and the problems of reaching a mutual understanding between the Army and OR agencies. Also, OR is handicapped by the lack of a great deal of test data which must be developed before the analysis can even begin. Furthermore all predictions on the effectiveness and cost of future action are only as accurate as the assumptions are valid. In fact there may be several solutions, depending on the choice of assumptions.

Many tactical and technical problems would be more amenable to solution if theoretical studies could be correlated with live experiments in which conditions were changed at will. However, the opportunities for such experimentation either in combat or maneuvers are extremely limited. The resultant use of operational data which are strictly observational rather than experimental impose severe limitations.

Operations research is also seriously limited in evaluating performance which is dependent primarily on qualitative factors, the magnitude and effects of which cannot be measured accurately, such as morale, training, leadership, surprise, weather, and terrain. In these fields competent military experience and judgment are generally more reliable than those of the operations analyst. This limitation stems from the fact that the social sciences which treat these problems are in their infancy as compared to the physical sciences and engineering. Therefore, many nonquantitative problems are not entirely suitable for scientific treatment.

There are time limitations as well. Although in World War II some of the results of OR were in action within 1 or 2 months after the original study was proposed, 6 months to 1 year is normally required for the more comprehensive problems. By nature OR is not well-suited to working on "crash" jobs geared to immediate staff requirements. The best results can

be produced when there is no urgent deadline. This explains the reluctance of OR groups to work on the Army's day-to-day problems.

Personnel Problems

Finally, like many other organizations, OR is limited by personnel problems. From a military standpoint the serious shortage of suitably trained and experienced scientific personnel in this field is aggravated by the competing demands of nonmilitary operations research and the higher salaries which industry offers. There were no formal university courses in OR until recently when a number of universities began offering formal training in operations research. Among them are the Case Institute, Massachusetts Institute of Technology, and Columbia University. Since the majority of new personnel acquired are untrained it takes several years to properly prepare them to do OR work and for them to acquire knowledge of weapons, weapons analysis, and the organization and tactics in which the weapons are to be used. In wartime it is also likely that OR organizations will be depleted by the draft unless action is taken to exempt operations analysts on the basis of their specialties.

There are many limitations to the application of OR, but the lack of precise performance data and the necessity for the use of approximations should not deter OR studies of urgent problems. At least OR can contribute a fresh approach and new insights into these problems. At best an unexpected solution may be had for a very little expenditure of effort.

Achievements

There is no accurate yardstick with which to measure OR achievements precisely, and it is unlikely that any OR studies will result in a single, clear-cut action on the part of the Army. Therefore, it is not possible to assess all the effects of the study on future Army actions. It is also

desirable to point out that the current program encompasses problems which are much broader in scope and more complex than those undertaken in World War II and that the scientific techniques used in the past were found inadequate, therefore necessitating the development of many new techniques and theories. Many are still in the process of development. Much of the work of the past several years represents capital investment in the development of new techniques and in the training of competent staffs to meet the study requirements.

The officer who has reason to disagree with the recommendations of an OR study in his area of responsibility will still find much of value. He will increase his background knowledge and his over-all understanding of the problem. He will obtain new ideas and additional arguments, pro and con. In short, he will have an increased capacity for recommending the best course of action. Even if the study merely confirms current Army practice, it is still an over-all contribution that provides the Army with increased confidence in its position and "ammunition" with which to defend itself.

Significant Contributions

In general, the most significant contributions to Army thinking and planning have been on the problems already discussed. The results of some of these studies are not immediately apparent and may not be completely realized for a number of years. For example, the dividends on weapons system studies will not be received until the recommended weapons are developed and proved in battle. The best general indication of the value of OR is indicated by the ever-increasing requests for additional studies, with the demand currently far exceeding the output. Also, the Army personnel on the working level most closely associated with ORO work, the chairmen of the ORO project advisory groups, are

almost unanimous in their convictions that there is a firm and continuing requirement for OR in the Army.

Future of Operations Research

There are three problems affecting the future of OR in the Army which merit special consideration. One is the impact of the growth of OR in the technical services on ORO's organization, mission, and scope. As discussed earlier it appears that there is virtually an inexhaustible area for OR which exceeds the capacity of ORO or the technical services alone. ORO is ideally constituted to handle the broad, complex problems of the man-weapon-environment type. On the other hand the technical service agencies are equipped to deal with the more specialized problems of limited scope pertaining to each service. Technical service studies will supplement rather than reduce the need for ORO work, since the former will serve as component parts of broader studies. The continued growth of OR within the technical services will also broaden the base of qualified OR personnel in the Army. However, the most effective utilization of limited resources will require a high degree of coordination and liaison between ORO and the technical service groups. In summary, the growth of OR in the technical services is a healthy development and the Army should accelerate it.

Special Unit Needed

The second problem is the need for a special unit whose primary mission would be to conduct operational experiments under controlled conditions to test new doctrine, organization, tactics, and weapons. The need for such a unit and the lack of opportunity for experimentation, either in combat or in peacetime maneuvers, has been pointed out already. The experimental unit envisaged would be of battalion combat team size initially. It would grow in size and scope of activity in accordance with the ability of OR organizations to

utilize it effectively. It is contemplated that the experiments conducted would not be ordinary tactical exercises or equipment tests such as are now conducted by the Continental Army Command boards but will be tests planned, observed, and analyzed by trained scientists as valid scientific experiments. Heretofore no unit has been earmarked for this exclusive use.

The diversion of tactical, school, or training cadre troops from their routine missions to this activity is an unsatisfactory compromise. While the use of a special unit might be subject to criticism as an unnecessary extravagance, the savings to the Army from improved performance would easily justify its existence.

Organization and Mission

The third problem involves the organization and mission of OR agencies in the event of full mobilization. The major effort is now centered in Washington with primary emphasis on long-term problems. The wartime concept outlined below entails radical changes in organization and mission.

The work program in war should be centered in the operational units in the field. Emphasis should be placed on short-term tactical and technical studies involving the most effective utilization of weapons and equipment available. The effort on long-term strategic studies could be sharply curtailed or eliminated.

The Washington organization of ORO could be reduced to about fifty technical personnel. Its mission would include the following:

1. Provision of technical and administrative support to OR units in the field.
2. Advising the Department of the Army on the impact of field studies on Army plans and programs.
3. Provision of a replacement pool for initial training of new men and for ro-

tation of personnel to operational units overseas.

4. Conduct of short-term special studies for the Department of the Army.

Based on British experience in World War II, and the recent and current experience of ORO teams in overseas theaters, the following basic principles of employment of this service in the field are indicated:

1. The attachment of OR teams to the largest tactical units, army group; or field army, when operating independently. The theater commander and the theater army commander who are concerned primarily with strategy, long-range planning, and administration are too far removed from immediate tactical problems to benefit from OR support.

2. The centralization of effort by maintaining OR groups intact to work as a team. The parceling out of personnel to subordinate units would dilute the team effort and would result in possible duplication of projects of interest to more than one subordinate unit.

3. The designation of the field director of the OR team as scientific advisor to the commander in addition to his primary mission to ensure a direct link between the two.

4. Allocation of OR personnel on the basis of about fifty for each field army.

Summary

OR techniques which had a late and uncertain start in the Army have come a long way in a relatively short time. There are those who say that OR skimmed the cream in World War II when easy successes were scored. But the author considers OR to be in its infancy with its greatest achievements ahead. The recent institution of college and university courses in OR, and the recent organization of a professional society of operations analysts, The Operations Research Society of America, will raise the interest in this profes-

sion and the level of technical competence of future analysts.

There are certain weaknesses in the program; but in the light of the contributions already made, the continuing requirements for its use, and the promise for the future, OR has an important role to play in the Army in peace and war. What has been referred to by Von Clausewitz as a "play of the imagination" has now become a reality.

Operations research has demonstrated its capability of contributing to improved Army operations in both peace and war. The present cold war situation and the

difficulties of planning for future war result in a greater need for operations research than ever before. The degree of success achieved by the operations research team in serving the Army depends largely on the degree of mutual understanding, consultation, and cooperation attained. The growth of operations research in the technical services is a healthy development which will supplement the work of ORO and broaden the base of qualified personnel in the Army. Based on the foregoing conclusions, the present ORO organization and mission would have to be altered radically for use in an all-out war.

THE MISSION OF THE MILITARY REVIEW

The **MILITARY REVIEW** has the mission of disseminating modern military thought and current Army doctrine concerning command and staff procedures of the division and higher echelons and to provide a forum for articles which stimulate military thinking. Authors, civilian and military alike, are encouraged to submit materials which will assist in the fulfillment of this mission.

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Remuneration for all published articles submitted by military writers (active-duty personnel of the uniformed services of the United States Armed Forces and students of Allied countries while attending the Command and General Staff College) in the magazine is on a competitive basis.

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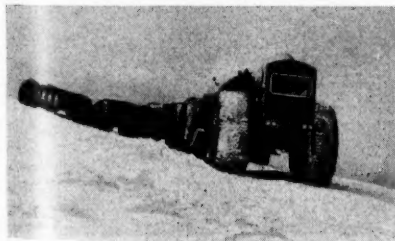
MILITARY NOTES

AROUND THE WORLD

UNITED STATES

Cross-Country Freighter

The *Sno-Train*, a new block-long cross-country freight train capable of moving nearly 100,000 pounds of supplies over deep snow in temperatures well below zero, has been accepted by the Transportation Corps for use above the Arctic Circle. Officially designated the *Logistical*



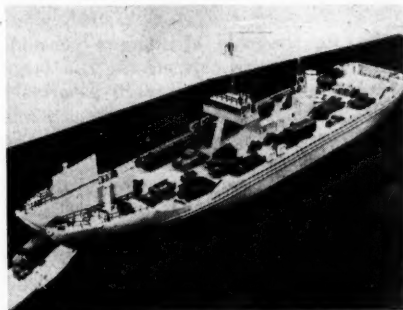
Cross-country freight carrier is accepted.

Cargo Carrier, the train consists of a control and power generating car and three powered trailers. One man operates the train from an electric console located in the front of the power car. Only the two front wheels are steered by the operator and succeeding cars are steered by mechanical coupling devices so that they track automatically. Each of the sixteen wheels mounts a tire 4 feet wide and 10 feet tall and is powered separately by an electric drive motor mounted in the hub.

A transparent "bubble" is provided in the roof of the control car for daylight observation and to facilitate celestial navigation during the long Arctic nights. The control car has sleeping space for four crew members.—News release.

Beach Discharge Lighter

A new beach discharge lighter, capable of receiving vehicular cargo without recourse to cargo handling equipment and of delivering the loaded vehicles directly to the beach, is now planned for construc-



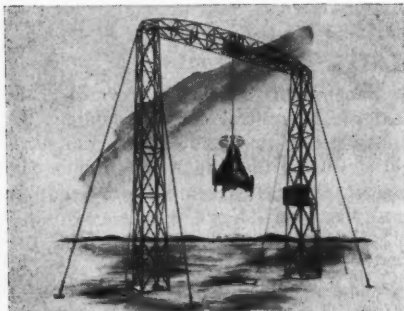
New self-propelled, deck-loaded cargo barge.

tion. Approximately 330 feet long and 65 feet wide, this self-propelled, deck-loaded cargo barge will carry 600 tons of vehicular cargo or 1,000 tons of general cargo.

It will have a loaded speed of 12 knots and a cruising range of about 4,800 miles. Its design includes vertical axis propellers which can give thrust in any direction, thereby affording maximum maneuverability in lighterage operations.—News release.

Vertical Takeoff Trainer

A special tether test rig for use in training pilots to fly the *XFY-1 Pogo* vertical takeoff plane has been erected at Brown Naval Auxiliary Air Station. The



Vertical takeoff plane in tether test rig.

steel structure is built in the shape of a giant arch with a cable descending in the center. The end of the cable is attached to the nose of the experimental plane to limit its movements. The large area inside the 150-foot arch reportedly permits the pilots to maneuver the plane both vertically and horizontally while learning to fly the *Pogo*.—News release.

Navigation System Test

The "Decca Navigation System," used by British airlines and the navies of Great Britain, Sweden, Norway, Denmark, and France, is being tested in southeastern Arizona for use by the United States Army and Air Force. The Decca system utilizes a main transmitter and "slave stations" 70 to 100 miles apart to form a precise grid pattern of low frequency radio waves. A 36-pound flight log auto-

matic plotter in each aircraft records a continuous route picture enabling it to fly around skyscrapers, mountains, and other obstacles. Evaluation data will be made available to commercial airlines and marine shippers.—News release.

Self-Adjusting Camera

A new motion picture gun camera which automatically adjusts itself to varying light conditions has been developed for the Air Research and Development Command. Mounted in the wing or on the gun-sight of the plane, the new camera eliminates guesswork by the pilot in estimating light conditions and is expected to afford a much higher percentage of properly exposed film.—News release.

Intercontinental Bomber

The *B-52 Stratofortress* intercontinental bomber is now standard equipment in one wing of the Strategic Air Command, and



B-52 Stratofortress is refueled in flight.

additional wings are forming as crews complete training and aircraft are delivered. With full fuel and bombload, the *B-52* weighs 175 tons at takeoff and has a range of 6,000 miles. It can climb above 50,000 feet and fly faster than 650 miles an hour.—News release.

Critical Skills

The Department of Defense has announced a special reserve program for men classified 1-A for military service and who possess critical skills being utilized in a

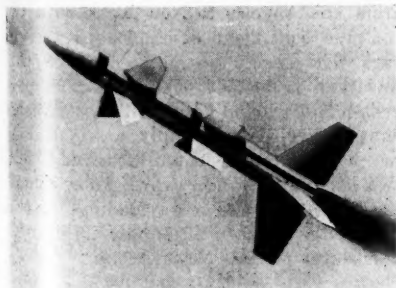
defense activity or research affecting national defense. Under this plan, such individuals will be chosen by Selective Service and certified as eligible for enlistment in the Ready Reserve for an 8-year period. After 6 months' active duty training, they will be transferred to the Standby Reserve for the remainder of the 8 years. The 6 months' active duty will consist of 2 months' basic combat training and 4 months in an assignment utilizing their special skills.—News release.

High Flying Targets

F-102A all-weather interceptors are testing their electronic fire control equipment against B-57 bombers high above the Mojave Desert. The fast and high flying B-57's enable the delta-wing interceptors to make target fixes at altitudes considerably higher than has been possible with any other target aircraft.—News release.

Air Defense Missile

The new supersonic ramjet surface-to-air missile *Talos* is ready for use, in conjunction with the *Nike*, in the air defense



Talos, new surface-to-air guided missile.

of the United States. Details on the capabilities of the *Talos* have not been released, but it is planned for employment from both land installations and guided missile ships. The Navy is planning one light cruiser for conversion to a guided missile ship employing this weapon, and

the conversion of other light cruisers to this capability is under consideration.—News release.

One-Man Helicopter

An ultrasmall 1-man helicopter, the *XRON-1 Rotorcycle*, developed for the United States Navy was successfully test flown recently. Intended for use in obser-



Navy's *XRON-1 Rotorcycle* is test flown.

vation, liaison, and small unit tactical maneuvers, the *Rotorcycle* weighs less than 500 pounds fully loaded with pilot, and is collapsible and can be folded into a small package for easy transportation.—News release.

Guided Missile Submarines

The guided missile submarine (SSG) scheduled for construction this year at the Mare Island Naval Shipyard will be equipped with atomic power. The nuclear powerplant will include a water-cooled reactor similar to that of the *SSN-478* now under construction. This submarine, along with the two conventional attack sub-

marines now under construction, the *Grayback* and the *Growler*, will have the capability of launching the *Regulus* surface-to-surface missile.—News release.

Atomic Age Division

The 101st Airborne Division which is to be activated this fall at Fort Campbell, Kentucky, will have embodied in it the most modern concepts of military science. It will have five combat groups, each being a self-contained force, and a strength of 11,500 as compared to the three regiments and strength of 17,300 of the present airborne division. Equipped with *SPAT*, a self-propelled, 90-mm gun that can be delivered by parachute, a family of lightweight trucks, lightweight general purpose machineguns, 105-mm mortars, and lightweight construction equipment, the 101st will have more firepower than the standard airborne division and can be air-transported with only half the number of aircraft necessary to lift a standard airborne division. Atomic capability will be provided by *Honest John* rocket units within the divisional structure. Signal equipment will include an airborne television system to bring the commander latest frontline information and a radio "guide system" to provide a continuous all-weather flight position picture for the increased number of observation aircraft and helicopters with which the division is equipped. The activation of the division increases the Army's potential to meet any possible requirements for a highly mobile force ready and able to cope with full-scale or peripheral conflicts.—News release.

Most Powerful Warship

The *Saratoga*, angle-decked supercarrier, the world's newest and greatest ship of the United States Navy and the sixth United States warship to bear that name, was commissioned recently. The 1,039-foot long carrier has 6 acres of operational

flight deck, can accommodate 100 planes, and displaces approximately 80,000 tons when fully loaded. The 207 million-dollar vessel is officially designated the *CVA 60*, and is manned by a crew of over 3,500 men. The mast of the *Saratoga* is hinged to permit passage under bridges which smaller ships clear with ease.—News release.

Earth Satellite

Patrick Air Force Base, Cocoa, Florida, has been selected as the launching site for Project *Vanguard*, which is the earth satellite project being carried out jointly by the three military services under Navy management. Exact launching dates for test firing of the components of the satellite launching vehicle have not yet been determined.—News release.

Sky Giant

The *C-133A*, huge turboprop military transport (MILITARY REVIEW, Apr 1956, p 67), was test flown recently. This giant plane can haul a 50,000-pound payload 3,500 nautical miles and could fly nonstop from Los Angeles to New York with the ton-mile equivalent of 22 loaded freight cars. The design useful payload of this leviathan is 145,583 pounds, and 98 percent of all ground force military vehicles can be hauled in it fully assembled. It has a 12,000 cubic foot pressurized cabin, two loading entrances which allow simultaneous front and rear loading, and a floor plan which will permit its use as a hospital plane.—News release.

Portable Atomic Reactor

An experimental portable atomic reactor is being constructed at Fort Belvoir, Virginia, at a cost of over 2 million dollars. The plant is designed to be taken apart, transported to distant military and air posts, and reassembled to provide light, heat, and power. There are now 35 Navy and Air Force enlisted men being

trained on operation, assembly, and disassembly of the new reactor. The reactor is expected to function for a week on a $\frac{3}{4}$ -inch cube of atomic fuel.—News release.

Hypervelocity Gun

The United States Navy's hypervelocity 40-mm gun has achieved a muzzle velocity in excess of 10,000 feet a second in



Hypervelocity gun readied for test firing.

experimental firings. The projectile, a nylon sphere about the size of a golf ball, is propelled by helium which is steam-heated by the combustion of hydrogen and oxygen. The speed of the projectile is timed by break-wire velocity screens and high-speed photography.—News release.

Radar Coverage Extended

The 3,000-mile Distance Early Warning Line, "Dew Line," the United States Air Force's polar radar line, will be extended by another 1,500 miles, it was announced recently. According to the report, the extension will be undertaken without delay and will cost an estimated 68 million dollars.—News release.

Guide Craft

A heavy amphibious vehicle has been directed by remote radio control in a beach landing for the first time in recent tests conducted by the Marine Corps. The driver

of the giant armored craft was in a helicopter hovering overhead. It was predicted that such remote control operations may become standard for assault landing craft. The driver had a full view of conditions of sea and beach while the driver in a low-riding assault craft can barely see beyond the next wave in rough surf. The better observation would be vital in eliminating the capsizing of amphibious vehicles, a major hazard of beach landings.—News release.

Army Aviation Training

The United States Army has the responsibility of training its own helicopter and plane pilots. The plan includes the transfer of two Air Force bases, Edward Gary and Wolters, both in Texas, to the Army. When the cargo helicopter training gets under way at Wolters, the primary training now being conducted at Fort Rucker, Alabama, will be discontinued. Most of the Army's primary fixed-wing pilot training will be done at Gary.—News release.

Marine 'FJ-4 Fury' Fighter

The Marines' new FJ-4 fighter is scheduled for early delivery to the First Ma-



The Fury, latest version of the Sabre Jet.

rine Wing in Japan. The new fighter, nicknamed Fury, is the latest modification of the famed Sabre Jet which was proved in combat during the Korean conflict.—News release.

NORWAY

Defense Costs

The cost of defense work completed in Norway during the period 1 July 1951 to 31 December 1955 has amounted to 1,100 million Kronen (154 million dollars), according to recent information. Construction planned for 1956-57 will cost about 135 million dollars.—News release.

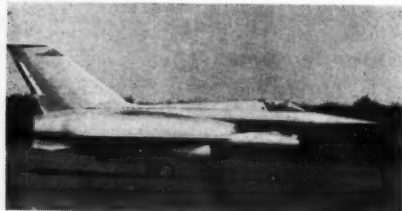
Northern Road

It has recently been announced that a highway is being completed to North Cape on the Scandinavian peninsula from Honningsvåg, most northerly town in the world. This completes a combination road and ferry direct connection to Oslo, 1,300 miles away.—News release.

FRANCE

Supersonic Jet Plane

France's new *NORD 1500 Griffon*, original design delta-wing jet, is planned for use in supersonic speed tests. The *Griffon*



Speed tests for *NORD 1500* supersonic jet.

was first flown last fall. Other performance figures are not available.—News release.

Acceleration Testing Device

A new centrifugal device at the Flight Test Center at Bretigny will provide test accelerations of 40g, about equal to the effect of reaching a speed of 110 miles an hour in one second. The test cabin, mounted on the end of a 16-foot structure, will be started in rotation by a compressed air catapult, and a 75-horsepower electric motor will provide the power necessary to

continue the movement of the device. It will be employed in the study of high acceleration effects on pilots as well as equipment.—News release.

JORDAN

Arab Alliance

The army of Jordan has been placed under the unified military command of the Arab Alliance, according to a recent Egyptian and Jordanian announcement. The other members of the alliance, Egypt, Saudi Arabia, Syria, and Yemen, have previously placed their forces under a common commander.—News release.

BOLIVIA

Farmland for Draftees

Young Bolivian draftees will have an opportunity to become landowners at the end of their year-long tour of duty with their country's armed forces, according to a recent report. The draftees are sent to the province on Santa Cruz to open new land for cultivation. They receive farm equipment from the Bolivian Government, and title to 50 acres of land if they decide to remain on their property.—News release.

BRAZIL

Submarines for Brazilian Navy

Two submarines of the United States Atlantic Reserve Fleet, the *Muskellunge* and the *Paddle*, are being overhauled at the Philadelphia Naval Shipyard for delivery on loan to the Brazilian Navy. Brazilian crews for the submarines will be trained at the submarine base at New London, Connecticut.—News release.

Atomic Reactor

A 5,000-kilowatt atomic reactor is planned for construction at São Paulo. It is reported that 350,000 dollars in North American funds have been made available for this project by the United States Atomic Energy Commission. It will be the

first atomic reactor to be constructed by United States funds outside the country. The U-235 required as fuel by the reactor will be leased to the Brazilian Government by the Atomic Energy Commission. —News release.

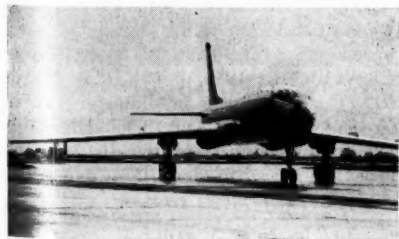
USSR

Ice Base

A new drifting research station, designated North Pole 6, is reported to have been established by the USSR on a floating ice island in the central Arctic Ocean. A team of eight persons make up the personnel of the new research station. It is the sixth such station to be established by the Soviets in the Arctic region. According to a report, these stations are used to gather weather and oceanographic data. —News release.

Civil Transport 'TU-104'

The civil transport version of the TU-104 *Badger* (MILITARY REVIEW, Jun. 1956, p 71) uses *Badger* airframe with modifications of fuselage for passenger accommodation. According to Tupolev, the designer of the aircraft, it has flown at 497 miles an hour for a distance of 1,990 miles. The twin engines, mounted in 40-foot nacelles close to the fuselage are 4 feet in diameter



Civil transport version of TU-104 *Badger*. ('The Aeroplane' Copyright Photograph.)

and are reported to develop over 15,000 pounds thrust each. The *Badger* is estimated to weigh approximately 125,000 pounds and have a capacity payload of

about 7 tons, carrying a full fuel load of 6,500 to 7,000 gallons of jet fuel. The transparent plastic nose of the *Badger*



Swept-back wing *Badger* has big engines. ('The Aeroplane' Copyright Photograph.)

duplicates that of the Tupolev TU-4 *Bull*, pirated copy of the Boeing B-29. —News release.

Atomic Icebreaker

The construction of an atomic-powered icebreaker is provided for in the current 5-year plan, according to a report. This vessel, expected to be in operation by 1960, will be used in clearing the North Sea route. —News release.

Jet Shell

According to a report, Soviet engineers are developing a new bombardment weapon which is fired from an 11-inch gun and powered in flight by a ramjet motor. Speed of the new weapon is reported to be more than 6 times the speed of sound; it can carry an atomic warhead. The ramjet motor is said to extend the range of the weapon from a normal 35 miles to 185 miles. —News release.

Submarine Missiles

A recent report indicates that the Soviets have developed a missile which can be fired by a submarine 300 feet under water and hit surface targets up to 140 miles away. The report states that work is continuing in the Soviet Union to de-

velop underwater supertorpedoes, underwater-to-surface missiles based on World War II German developments with solid-propellant rockets, and underwater-to-air missiles. The latter is hailed as an entirely new concept in submarine defense against attacking aircraft.—News release.

Light Helicopter

The Soviets' 1-place helicopter, the *K-10* "Flying Motorcycle," is being put into quantity production, according to a report. The coaxial *K-10* can be carried by and land on a flatbed truck. It is credited with a 75-mile-an-hour top speed and a ceiling of 8,200 feet. It is reported to be very economical, using less than one-half pound of fuel per mile of flight.—News release.

EAST GERMANY

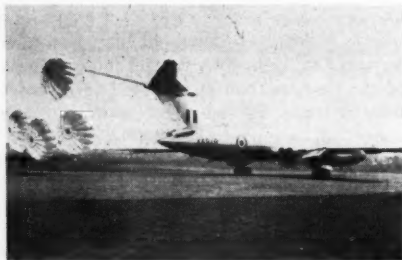
Copy Helmet

The new steel helmet for the East German Army closely resembles that worn by the Czechoslovakian Army, according to recent information.—News release.

GREAT BRITAIN

'Near Sonic' Bomber

Great Britain's 4-jet *Victor* bomber (MILITARY REVIEW, Feb 1955, p 68 and Feb 1956, p 70) was recently shown to the

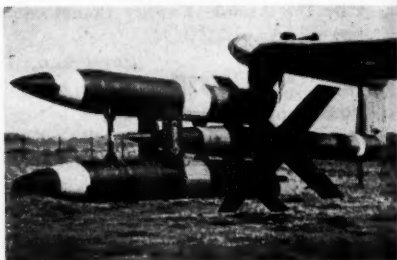


Victor multiple parachute landing brake.

public for the first time. Among its unique features are its crescent-shape wing and the multiple parachute landing brake.—News release.

Air-To-Air Guided Missile

The *Fairey Fireflash*, first British air-to-air guided missile to destroy a radio-controlled target aircraft, is now in pro-



British air-to-air guided missile revealed.

duction for the Royal Air Force and is under consideration for use by Commonwealth and NATO air forces.—News release.

Protective Covering

A reusable protective shipping cover for jet engines has recently been brought into extensive use. Consisting of plastic layers sprayed over a paper base, the new airtight "Cocoon" is equipped with zipper fasteners for easy access.—News release.

Turbojet Engine

An improved *Bristol Olympus* turbojet engine, the *BO1.11*, is planned for installation in Great Britain's highflying *Canberra* bomber (MILITARY REVIEW, Feb 1953, p 69 and Mar 1953, p 69). The 13-foot *BO1.11* is 40 inches in diameter and in a recent test developed 12,000 pounds of thrust, as compared to the 10,000-pound thrust engine with which the *Canberra* is now equipped.—News release.

Consider Canadian Fighter

Official British interest has been shown in the Canadian *Avro CF-105* all-weather fighter. The delta-wing *CF-105* is reported to have been designed for level-flight at twice the speed of sound and is expected to have a range of 1,500 miles

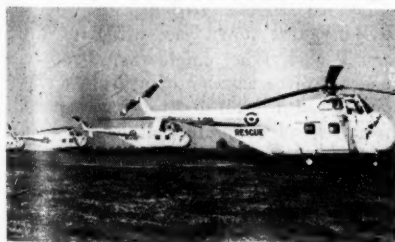
and to carry air-to-air guided missiles. According to the report, initial versions of the plane are powered by 15,000-pound thrust *J75* turbojets, and later speedier versions may utilize the 18,000-pound thrust twin-spool *PS-13* turbojets.—News release.

Armed Force Reduction

The British Army, now at a strength of 404,000, already reduced one-third from its Korean peak, has been planned for reduction to 300,000 in the next 2 years. A recent report indicates that the planned reduction may be accelerated by bringing an end to the 2-year military draft, and may include reduction of the army to 250,000 men, all regulars.—News release.

Helicopter Rescue Role

Great Britain's Royal Air Force recently received several *Whirlwind* helicopters for use in rescue work. During the first 2 months of 1956, helicopters operated by the Royal Navy and the Royal



Rescue helicopter for Royal Air Force.

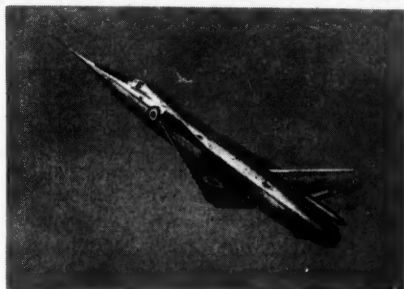
Air Force have saved approximately 70 lives around the island coast.—News release.

Aircraft Exports

Aircraft exports during the first 2 months of 1956 have totaled over 42 million dollars, according to a recent announcement. Exports went to 30 countries and exceeded by nearly 4 million dollars the exports for the first quarter of 1955, which was a record year.—News release.

Jet Speed Trial

The *Fairey Delta-2*, Great Britain's "Droop-Snoot" jet (MILITARY REVIEW, Dec 1955, p 73 and Mar 1956, p 73), recently flew a series of flights over a meas-



Research jet averages 1,132 miles an hour. ured course at an average speed of 1,132 miles an hour. The *Delta-2*, an advanced research aircraft, is distinguished by razor-thin delta wings swept back 60 degrees on the leading edge.—News release.

Tests Successful

The *Vickers Supermarine N.113* jet fighter (MILITARY REVIEW, Apr 1956, p 73) speedy carrier-based plane designed to carry an atom bomb has successfully com-



Supermarine ready for catapult launching.

pleted trials on the Royal Navy's most modern carrier, the *Ark Royal* (MILITARY REVIEW, Jan 1956, p 73). The *N.113* can be launched by catapult or make a more conventional takeoff from the *Ark Royal's* angled deck.—News release.

EGYPT

Weapons Training

Egyptian officers are being trained in rocket warfare by Czechoslovakia, according to recent information. The report states that the Czechs have been schooling the Egyptian pilots for several months in handling the jet planes and other armaments. Czechoslovakia agreed to sell Egypt last year in exchange for Egyptian cotton. Reports also indicate that about 200 Egyptian officers and noncommissioned officers are being trained in land, sea, and air operations at a base near Poland's Baltic Sea port of Gdynia. Their instruction is reported to include the use of radar, submarines, and all types of artillery.—News release.

CHINA

Railway to New Oil Region

A newly discovered oil region in the Tsaidam Basin, a swampy wasteland in northwest China, will be connected by rail to Lanchow, according to a recent report. The Tsaidam Basin has been hailed in the China press as a potential "Baku," an obvious allusion to the major Soviet petroleum producing center.—News release.

WEST GERMANY

German Air Force

According to recent information, 3,200 military aircraft are planned for the West German Air Force. The planes will be purchased abroad at a cost of approximately 1.5 billion dollars, and will include 1,236 combat jets.—News release.

Train in United States

The major part of a group of 35 German fliers has arrived in the United States for flight training. These pilots will train at Pensacola, Florida, for 14 months, followed by 8 months' advanced training near Corpus Christi, Texas. Present plans are that they will return to Germany as instructors.—News release.

German Army Instructors

An additional 31 instructors, selected from units of the United States Army, Europe, are preparing to assist in training the German Army. Following a month's special study, they report to duty stations throughout Western Germany making a total of 456 Americans assigned to German Training Groups.—News release.

JAPAN

Minesweeper Launched

The 230-ton *Yashiro*, the third minesweeper to be built in Japan since 1945, was recently launched at Yokohama. The *Yashiro*, built at a cost of \$379,600, has a maximum speed of 13 knots, is armed with a 20-mm machinegun, and carries American-made minesweeping equipment.—News release.

SWEDEN

Double Delta Supersonic Plane

Sweden's new double delta design supersonic *J-35 Draken (Dragon)* has been successfully test flown, according to a recent report. The single-seat *Dragon* is reported to be capable of attaining supersonic speed in level flight and incorporates an advanced configuration developed exclusively in Sweden and tested during the last 2 years in the *SAAB-210* jet research plane. The double delta design combines ailerons and elevators on the trailing edge of the wing. The fin also of delta form continues forward to the cockpit in a low spine. Information as to performance figures has not been released at this time.—News release.

ARGENTINA

Joins Alliance

Argentina has officially joined the Western Hemisphere front against Communist aggression by ratification of a resolution adopted by the 10th Inter-American Conference at Caracas, Venezuela, in 1954.—News release.

FOREIGN MILITARY DIGESTS

Guerrilla Warfare

Digested by the MILITARY REVIEW from an article by
Major J. G. Sloman in the "Australian Army Journal" September 1954.

MODES of warfare change, the introduction of new weapons and their counter-weapons dictate, to a large extent, the tactics of the day. So "guerrilla warfare," both as a tactical and strategic concept, will change.

In World War II "special forces" were employed on certain tasks which were outside the scope of normal operations, and these make exciting military reading. We can learn from these past experiences, but the major problem is to plan and train for the future and to have well ingrained in our minds the basic essentials for the employment of such guerrilla forces.

The object of this article is to demonstrate some of the basic principles of this so-called "guerrilla warfare," and to discuss the more important tasks, both offensive and defensive, which may be undertaken by "special forces." In addition, the lessons from individual operations will be discussed in an attempt to correlate them with our present training requirements.

Guerrilla warfare is a method of waging

war employed by men living in an area occupied or surrounded by the enemy. The guerrilla may be fighting in an area of his own country temporarily under enemy domination, or he may fight in a foreign country favorable to him, but at the time in the grip of a superior enemy.

Such a wide definition covers the employment of "irregular" and "special forces" used in the past. Over-all, the same principles apply to these forces as to forces employed in regular warfare, but it is in the interpretation that the difference lies.

In the past guerrilla forces under the vital leadership of a junior commander have often come to be known as "private armies." This has been mainly because there have been no suitable regular units to carry out such operations. This is bad. If such a force is necessary in warfare, it should become an integral part of the military establishment. Training at all levels should include guerrilla principles, and staff officers should be capable, not only of giving orders and directives to their artil-

lery, engineers, and air support, but should also be conversant with the directives they should give to their guerrilla component. There should be a recognized staff officer in all senior formations whose job it would be to deal with such "special forces."

Units Available

In the past guerrilla forces have been formed for three strategic reasons:

1. A conquered people attempting to liberate themselves from an oppressor—"Armies of Liberation."
2. A defeated army leaving guerrilla groups to harass the enemy while the main army regroups. Such were the "stay behind" parties planned in Malaya.
3. Offensive guerrilla activities planned and carried out before a major attack to confuse and soften the enemy's defenses.

The great danger of the political type of guerrilla warfare as instanced by Armies of Liberation is that a revolt, once started, may get out of control or into the wrong hands. How to control such a revolt is a military problem in itself. No better illustration of such a situation could be found than that which existed in Indochina.

Another instance of the importance of adequate control, details of which are not widely known, occurred in England after Dunkerque, when a strong bid was being made by Communists led by Tom Wintringham to obtain control of the Local Defense Volunteers (LDV). Many LDV committees were won over to his side, and even a "school for saboteurs" was opened. This threat to the country's security was recognized and countered by the sudden disbanding of the LDV and the formation of the Home Guard, with its staff and headquarters all over the country bursting with retired generals, admirals, and air marshals.

The answer to this very definite danger is that such "special forces" should be raised legally and have a definite military

purpose, with a trained staff to look after them and understand their problems. It is desirable that there should be an organization in peace, which could be readily expanded, if necessary, in time of war.

"Stay behind" parties have a great nuisance value. Their object is to delay the advance of the enemy by ambushes and by interfering with his lines of communication, causing a diversion and gaining time for the orthodox troops in which to concentrate for the counterattack.

If such a party is to remain in action behind the enemy lines for any length of time, communications with a friendly force and the supply of ammunition and food become very important. This requires considerable preparation before such a party is launched, and continuous liaison while the party remains in contact with the enemy.

Offensive guerrilla activities include deep penetration behind the enemy lines, the collection and immediate reporting of information about the enemy which may be of use to the orthodox units, and demolition and general harassing activity against the enemy's fixed defenses. These activities, together with those previously mentioned, require expert staff planning and execution by soldiers trained for such special tasks.

Let us now examine the types of units available for these special tasks:

Secret service.—During World War II the British service carried out many operations behind enemy lines and, although many of their personnel were supplied by the army, they remained a clandestine unit dealing with agents in enemy-held territory.

Political warfare units.—These were important, particularly in controlling the strategic movement of forces operating in enemy-held territory, but it is very difficult to assess their role in any future war from the strictly military point of view. It is enough to say that there must always be

a political organization in liaison with guerrilla forces.

Orthodox units.—These are units with a regular establishment, and their primary task is not that of infiltration behind the enemy's main forces or clandestine work of any nature. However, it could be anticipated that the members of such an orthodox unit may be trained for such work as a secondary role, the limiting factor being that the unit is composed of well-trained men of a high physical standard.

Special units.—These are uniformed army units specially trained to carry out tasks which lie outside the scope of an orthodox unit, such as long-range reconnaissance, harassing operations, and demolition work.

It is realized that, although the army will provide most of the personnel for such a unit, it is only with the full cooperation of both the navy and air force that their special tasks can be carried out. Such problems as the delivery to the site of operation and the supply of a force in enemy-held territory with food and ammunition are very much a sphere for close cooperation with the other services.

Lessons Learned

It is of interest to consider some of the varied tasks carried out by special units in World War II and to consider whether there will be a requirement for such units in a future war.

The raising and maintenance of resistance forces: This was well carried out by the Special Air Service (SAS) in both Sicily and northwest Europe. Uniformed parties were dropped by parachute and maintained by air. Such small parties behind the enemy lines were able to lead the partisan groups, and achieved results far out of proportion to the number of uniformed men employed. Their communications were of the utmost importance, and for the French *maquis* operations a British Broadcasting Corporation transmitter was

used from Great Britain, with a special link to the desk of the brigadier commanding the SAS. General of the Army Eisenhower stated in his report that the *maquis* were worth 12 divisions to him. Their uniformed corps was the SAS.

The destruction of communications, radar installations, and enemy beach defenses, both for strategic reasons and in immediate tactical support of particular operations, was carried out by commando units. The first commandos were used in July 1940, and they were to operate in small parties along the frontline in northwest Europe to keep alive the offensive spirit and cause the enemy to disperse his forces in order to defend all of his long frontline.

The commandos were trained to operate as individual units without any supporting arms, and this made them very suitable for surprise raids. They were often employed in a seaborne role, and the future employment of such commandos most likely will be bound up with amphibious operations.

Commandos were also used to carry out raids, both as a diversion and in support of operations launched by orthodox forces with full land, air, and sea support.

Collection of information by observation behind the enemy lines was carried out by a number of special units. As an example of this type of operation the work of the Long-Range Desert Group is outstanding. This group was formed in the Western Desert in June 1940, for reconnaissance and survey of the vast desert behind and to the enemy's flanks. As well as carrying out long-range reconnaissance, this unit undertook other tasks such as the dropping and supplying of agents into the enemy-held desert, and the preparation of "going" maps. Also they acted as guides to orthodox units in desert operations. The Long-Range Desert Group was able to produce much useful information about the enemy by means of protracted

patrols, their military value being much greater than could have been obtained by air or other types of reconnaissance. The Western Desert was particularly suitable for this form of operation, and the necessity for such a unit may well arise again.

Another unit working in an entirely different sphere, but with a similar role, was the Australian Coast Watching Organization, which operated in the islands to the north and northeast of Australia during the crucial period when the Japanese were advancing southward and threatening the continent.

The origin of the coast watchers goes back to 1919, when a scheme for manning the long coastline of Australia and the islands was studied. However, it was not until the immediate prewar years that the Division of Naval Intelligence was able to put the organization into working order. The watchers were installed in strategic island outposts, New Guinea, the Solomon Islands, and New Ireland, and in the months following the Japanese occupation they remained at their posts and were able to report on enemy positions and movements.

Radio was the means of long-range communication, and reporting on convoy dispositions and warnings regarding enemy air attacks were their main roles. Had the enemy been able to deliver their air attacks, without any warning from coast watchers, then the position for Allied shipping would have been very serious. As it was, the ample warnings of the approaching air attacks made it possible for the shipping to be ready and on the move, and the Allied fighters to be in the air waiting.

The success of this organization was due largely to its prewar planning, and it is now that we must plan for similar special force tasks in any future war.

Diversion and exploitation of the enemy to force him to dissipate a considerable

force for his own internal protection is another very useful guerrilla activity. Land Forces Adriatic (LFA) were used for such a purpose in the Balkans. This heterogeneous force, with supporting weapons, carried out operations on the mainland bordering the Adriatic to assist the partisans in disrupting the enemy's lines of communication. Raids were also carried out on the occupied islands of the Adriatic, and these sometimes developed into major battles, the LFA using its raiding support regiment and the army field regiment to provide supporting weapons.

The operations in this theater demonstrated that a small mobile force, well led, could contain a much larger force of the enemy, and these were of material assistance in diverting enemy troops from the main operations in northwest Europe at this time.

Harassing and demolition activities far behind the enemy's frontline will cause a great deal of confusion. Such was the role of the first Wingate expedition in Burma. A number of small, self-supporting columns, resupplied by air, marched across the Chindwin River in February 1943, deep into enemy-held country, and by their mobility they were able to block the main railway line and put it out of action for 6 months. Their further operations prevented the Japanese attack on Fort Hertz, but eventually the columns were forced to retire because air supply could no longer be continued in the face of enemy fighter interception.

An essential requirement for such an operation was the cooperation of the local inhabitants. If this had been lacking, all movements of the column would have been reported to the Japanese, and security thereby compromised.

Such an operation with long jungle marches imposes a heavy physical and mental strain on all those taking part. This emphasizes the importance of selection and adequate training of the troops.

Satisfactory evacuation arrangements for the sick and wounded must be made.

The campaign demonstrated that a small, mobile force, operating in the jungle behind enemy lines, could gain much useful information and cause the diversion of a much superior enemy force from its main task.

Special beach reconnaissance carried out stealthily before an amphibious assault and the provision of guides to lead in these assaults were two of the important tasks carried out by the small operations group (SOG). The SOG was formed in the Southeast Asia Command in June 1944 to group under one command all the special units serving in that command. This step was taken both to simplify command in the area and to bring about some measure of standardization in training and equipment of these units. The function of the group was defined in a directive which stated:

To provide small parties of uniformed troops trained and equipped to operate against enemy coastal, river, or lake areas, using as their final means of approach various types of small craft, inflatable boats, paddle boats, or swimmers. . . .

During its active existence in 1944 and 1945 this group carried out many important operational missions in Southeast Asian waters.

Beach reconndissances were made for large-scale landings in north Sumatra and in Malaya. Submarines were found to be the best means of transporting the units to the area of the operation, and then detailed tasks were carried out in canoes. Information on the following lines was often obtained:

1. A cross section of the beach, including gradients, to assist in landing of troops and equipment.
2. Details of tunnels and obstacles both above and below the water level.

3. Heights of the tides and time of ebb and flood.

4. Periscope photographs of the beach area for future recognition.

5. Information about the enemy coast watching service.

This form of information made better planning of amphibious operations possible.

Coastal reconnaissances in force were made on the Arakan coast to test the enemy's defenses. The information gained helped in the final assault. The SOG units also played an important role in the crossing of the Irrawaddy River by the Fourteenth Army. River patrols were carried out along with reconnaissance of likely river crossings so that units of the SOG were able to guide the assault troops to the correct beaches and across the suitable river crossings when the operation commenced.

In the Southeast Asia theater these small, special units did an invaluable job and under similar conditions they would be required again. It seems desirable, therefore, to have a trained unit ready for such employment. Basic training similar to that required for all special units could be implemented by training in canoes and small boats; operational swimming, including underwater swimming; in the general technique for small-scale amphibious raids; and beach reconnaissance.

Modern Guerrilla

In considering these individual activities of special units an attempt has been made to emphasize their most appropriate role and to anticipate future requirements. Tactically there will always be an area behind the sphere of activity of the orthodox units but forward of the enemy's rear echelons. This area will become the field of operation for the special unit filling the gap between orthodox operations in the tactical zone and the operations of the secret service behind the enemy lines. Because of the unusual nature of their

tasks these units will require special training, but once committed to battle, they would come under the direct command of the orthodox headquarters in their area similar to any other supporting arm.

This is only one concept for the employment of the special unit. In such a role the unit could be used to support the orthodox force by special operations or by long-range reconnaissance into enemy-held territory to provide the normal forces with invaluable information.

It cannot be stressed too often how important it is for the special units to have the active cooperation of the native population of the country in which they are operating. If this cooperation is present, then many of the problems of security and supply of a force operating well forward of its own lines will be solved.

The actual type of special unit required will vary with the geographical conditions of the theater of operation. However, the equipment and training should be based on the general requirements of a special unit which hinge on long-range reconnaissance, demolition, and the collection and reporting of information. These tasks will be common to all theaters, therefore, special training will be required in both communications and demolition techniques.

This training can be organized in peacetime and an establishment designed for rapid expansion in time of war. Basic training is already available at established army schools and the special skills necessary to these units may well be learned in cooperation with the other services, for example, paratroops and small ship units. In war, the actual training will vary depending on the conditions of the different theaters. Advanced training schools could be established for special units in each different theater thereby giving centralized control and a continuous flow of important local battle experience which could be passed on to the new units as they arrive in the area.

If these lessons, learned from World War II, are considered in the planning of special units in the future, much time and energy will be saved and the special unit will emerge as a properly organized fighting component ready to go into action when needed.

In peace preparations can be commenced for the employment of "special forces" in war, and it is that aspect of our study of guerrilla warfare which will now be considered.

Peacetime Preparations

It becomes increasingly clear from the study of the various activities of special units in World War II that there will be a requirement for such units in the future. However, if these rather specialized tasks are forgotten in peacetime and no thought given to the preparations that must be carried out there will once more be hasty organization, with competition for trained personnel and suitable equipment, and all the inherent dangers of the so-called private army.

There will always be a tendency for these units to be regarded as forces apart, and so drift away from normal command. This tendency must be carefully controlled—the operations of special units should not be cloaked in any form of secrecy and orders should be passed through normal staff channels at all times.

Having stressed the importance of control of these special units through normal staff channels, let us pass on to a discussion of a suggested method of peacetime training. Because of the economic limitations imposed in time of peace it is not possible to have a full-scale special unit organization with its own training school. However, it is possible and, in fact, advisable that all existing army schools include the relevant aspects of special unit training in their syllabi. This inclusion would not necessitate any great change in the existing organization and in a short

time there would grow up an appreciation of the correct roles of special units.

For example, the School of Infantry could deal with the training for long-range patrols behind enemy lines and the various problems of supply that would arise. The Armored School might well develop the use of the light car armed with a medium machinegun that was used with promising results in northwest Europe. The School of Military Engineering could teach the important techniques of demolition and sabotage behind enemy lines, while development of special radio sets suitable for such operations would be carried out at the School of Signals.

Some of the special force techniques which could be incorporated in the training carried out at normal army schools are long distance marching, long distance reconnaissance and demolition, small boat work, airborne approach and supply, casualty evacuation behind enemy lines, sabotage and explosives, desert navigation, mountain warfare, operations in arctic conditions, personal weapons and their use, beach reconnaissance, ambushes, maintenance of a small operational base, and use of special radio sets.

In this manner all personnel would soon appreciate the importance of guerrilla activities and would come to regard it as a phase of normal warfare. If war then came, there would be a source of well-trained troops available for service in special units, requiring very little additional experience before going into action.

In addition to the training at the various army schools it would be advisable to

cooperate with the other services—particularly for training in small boat operation, amphibious attacks, and paratroop training. It would also seem desirable that a central special unit organization be established to study the problems of training at the various army schools and to control interservice liaison. In time of war this central control authority could rapidly expand into the "Special Unit Headquarters" and be immediately responsible for the formation of special units from the trained troops available. In the ideal case, only training as a team would be required before the unit would be ready for action. The officers and noncommissioned officers would, where possible, be chosen from those who had instructed and received advanced instruction in special unit work at the respective army schools.

It is not possible to fix an ideal size for an operation unit because each task will have its special requirements. However, a force of 20 to 50 men would be suitable for most tasks, and 4 to 6 of these "troops" could form a special unit under a lieutenant colonel's command. Troops could always be detached to assist orthodox forces, but they would still remain part of their own unit with their own esprit de corps. It is necessary to stress again that, although there is an intelligence aspect of the training of these units, there should be no secrecy concerning the definite role of these special units. They are soldiers trained for particular operations of reconnaissance, demolition, and harassings—tasks which often lie outside the scope of the orthodox unit.

MOVING?

If you are moving, please notify the MILITARY REVIEW, Fort Leavenworth, Kansas, of your change of address. Be sure to include your name, old address, and new address.

The Missing German Naval Infantry

Translated and digested by the MILITARY REVIEW from an article by W. Rempel in "Deutsche Soldaten-Zeitung" (Germany) November 1955.

THE advances of technical warfare during the first half of the twentieth century resulted in the military necessity for the development of amphibious warfare methods, techniques, and equipment. Outstanding in this field are the accomplishments of the United States Marines in World War II. On the other hand, Germany has historically made little use of this mode of warfare.

In World War I the Germans made a successful landing at Tagga Bay on the island of Ösel which led to the conquest of the Baltic Islands. The only other German amphibious effort, the landing of the Von der Goltz Expeditionary Corps in Finland in 1916, occurred in an area where no coastal defenses existed and no opposition was encountered. During the ensuing period of peace, 1919 to 1939, there is little evidence of any consideration of training troops in amphibious warfare, the development of special equipment necessary, or the possibility of the tactical necessity for such operations. Basically, a major landing on an open defended coast was regarded as impossible.

In 1936, following the London Naval Agreement of 1935, a German naval landing company was formed. This small organization was obviously planned for limited missions—brief landings of the raid type. A simultaneous development of appropriate landing craft did not ensue. Hitler, averse to maritime thinking and pursuing continental objectives, made no effort to push the German naval strength beyond that acquiesced in by England, and the navy was obviously relegated to a rear position in German rearmaments.

No records of the experiences of the various naval brigades of World War I were kept, and with the outbreak of war

in 1939 the German Navy was without any instrument of amphibious warfare worthy of mention.

The naval landing company, raised to battalion size and renamed the "naval assault battalion," participated in the storming of Westerplatte as infantry, but took no part in the several landings which were actually conducted in the early part of the war. It did not participate in the preparations for the Norwegian operations. It would appear quite likely that the catastrophe of Oslo Fjord, where a heavy cruiser and two gunboats loaded with troops were sunk and a light cruiser was badly damaged by Norwegian coastal artillery, could have been avoided if the first attack wave had consisted of naval infantry with the mission of elimination of the coastal batteries.

Thus, following the victory in the west in 1940, the German Navy found itself faced with a task for which it was unprepared—the invasion of England. In 1939 Admiral Raeder had undertaken the study of the possibility of an amphibious landing on the British Isles. This planning project was dropped when the Army High Command (OKH) pessimistically estimated that such an eventuality was not likely to occur. On 21 May 1940, after reaching the mouth of the Somme, Admiral Raeder again talked to Hitler on the possibility of effecting a landing on England. Hitler's planning instructions were issued 7 weeks later. The Navy High Command immediately began scraping together all usable river and coastal shipping as an improvised landing fleet which, they reported, would permit nothing but a fair-weather operation.

Further difficulties arose in the lack of a coordinating Reich General Staff and in

the fact that neither the *Oberkommando der Wehrmacht* (OKW) nor the OKH possessed a clear idea of the magnitude of the task involved. Based on a completely erroneous estimate of the enemy situation (that 17 English divisions would be directly engaged in the defense of the coasts), the



army, remembering the considerable losses of the Norwegian Campaign, insisted that the landing be conducted with a broad front of 25 divisions organized into 2 armies, and the first wave of at least 10 divisions to land within the first 96 hours.

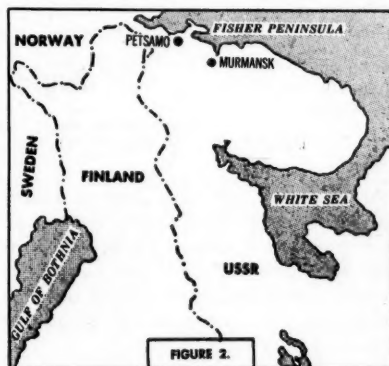
In contrast with this, the navy held the view that its means limited the landing to a narrow zone within the Straits of Dover and would not permit the more pretentious landing plans asked for by the army. Looking back we can see that the navy solution was not only capable of being carried out but also had a real chance of succeeding. The army's false estimate of the situation, however, prevented recognition of this fact. The failure to resolve these differences, along with the protracted delay by Hitler who steadfastly held to the hope of a political solution, resulted in the final abandonment of the project.

This lack of understanding and the lack of preparation for amphibious warfare continued into the Russian Campaign with

neither the Army General Staff nor the navy making any suggestions toward navy support of army operations. There can be little doubt that a landing on the island of Ösel in the Baltic area in June 1941 would have led to a quicker collapse of the Soviet northern front.

Amphibious operations in the Gulf of Finland would have been much more difficult because of the skillful mine warfare of the Soviet Navy. Nevertheless, a landing in early September on the islands of Kronshtadt and in Koporsky Bay, cutting around the advance route of the army, would not only have broken through the outer defense ring of Leningrad at a vital place and have speeded the advance of the army, but would have nipped in the bud the formation of the Soviet bridgehead at Oranienbaum.

The opportunity also existed for operationally important landings on the extreme northern flank of the Murmansk coast. It is difficult to doubt that a quickly effected



seizure of the Soviet portion of the Fisher Peninsula, in conjunction with the formation of a bridgehead on the point of land north of Murmansk, could have eliminated the decisive threat to the left flank of the mountain corps pushing from Petsamo toward Murmansk and thus prevented the bogging down of the front on the Litsa.

In spite of the rich picture of operational possibilities, the German amphibious potential, limited though it was, was not exploited. In fact, the naval assault battalion, an excellent cadre for a naval landing brigade, was never increased in strength. Aside from coast defense duty, it was always employed as infantry. During the last phase of the French Campaign it was transported by air for the occupation of the English islands in the channel. At the beginning of the Russian Campaign it participated along with army units in the storming of Libau, and its further employment during 1942-45 was hardly more logical. Portions of it were on the "Oranienbaum Kessel" front, and later on the Narva front some of its personnel were employed as infantry guards at island prison camps, while others were with an assault boat detail charged with the mining of the Leningrad Sea Canal. These diversifica-

tions led to a deterioration in training in its primary mission until, in one of its infrequent amphibious efforts, half the battalion was lost. Altogether, this unit rarely found employment corresponding to its special character. Sufficiently reinforced, it would have been capable of handling much greater tasks.

Thus, throughout the war, the German Navy was confronted with major amphibious tasks which were completely beyond its capabilities. Not even the failure to arrive at an agreement on the landings on England, which loudly proclaimed the dilatory action of the past, sufficed to inspire an effort to improve the situation. The German Naval Infantry, omitted from Hitler's grandiose plans and forgotten by the German High Command, was never given an opportunity to play its part—a part that might on many occasions have changed the course of battle.

Night Fighting

Digested by the MILITARY REVIEW from an article by
Major H. B. C. Watkins in "The Army Quarterly" (Great Britain) October 1953.

AS A NATION, we have come to realize that we are never likely to approach equality in numbers of men or heavy equipment with our enemy. To win our battles we must rely upon military skill and the high quality of our equipment to counteract numerical inferiority.

We shall find that when confronted with the problem of attacking large masses of well-armed and well-supported infantry that tactical surprise will become a factor of primary importance.

Faced by an adverse air situation, we shall be driven more and more to use the protecting cover of darkness to enable us to achieve that surprise. We must, there-

fore, learn to exploit to the fullest the effect of a night attack upon the enemy's morale and so accustom ourselves to night operations that all arms have complete confidence in their ability to operate and, above all, to resist attacks in their turn during the hours of darkness.

The Attack

In his book, *On War*, Clausewitz wrote:

Fundamentally, every night attack is only a more intense form of surprise.

* * * * *

Surprise lies more or less at the foundation of all (military) undertakings, for

without it superiority at the decisive point is really not conceivable. Surprise becomes, therefore, the means to the attainment of numerical superiority but it is also to be regarded as an independent principle in itself, on account of its moral effect. When it is successful to a high degree, confusion and broken courage in the enemy's ranks are the consequences.

The army has come far since Wellington made his costly night assaults upon the fortresses of Ciudad Rodrigo and Badajoz, adding fresh fame to the valor of the British infantryman. Then, the soldier was supported by little but his personal arms and his own indomitable courage. Now, modern science has equipped us with so many aids that a well-prepared night attack by well-trained troops has become a means of obtaining a success far cheaper in men's lives than the normal setpiece daylight assault. That the troops must be well trained is fundamental, as the following examples will show.

The Western Desert, 1941-42

The marked disparity in gun power between the German and British tanks operating in the Western Desert in 1941 produced serious problems for the commanders of the British armored formations. The difficulties of the infantry tank commander were particularly severe, since he had not the speed of the *Cruiser* tank with which to maneuver and thus in some measure offset the inadequacy of his main armament.

In the early autumn of 1941 the First Army Tank Brigade was suddenly faced with the task of replacing one of the armored brigades of the 7th Armored Division. The following extracts from a letter written by the commander of the First Army Tank Brigade show his reaction to the problem:

The genesis of the whole business of the First Tank Brigade being highly trained for night operations (and they could not

have carried out their highly successful night battles if they had not been) was my search for a solution to the problem of fighting a German armored division with an army tank brigade. A couple of months before the big advance we had to take the place of an armored brigade in the 7th Armored Division, while one of the proper armored brigades was refitting at base.

We were lying on the left of Matruh with the task of preventing a German armored advance around the left flank of Matruh to Cairo. The German tanks would have the legs of me and outrange me. My only advantage was thicker armor. It was quite clear that I could not bring them to a decisive battle in daylight—indeed it would be foolish to try. So my plan was, with the aid of my supporting artillery, to withdraw slowly when pressed, fighting a delaying action and keeping them in play until dark. Then to attack them in their night leaguer. We were under orders to be in immediate readiness, but I was allowed to have one squadron per battalion training. So I concentrated on night training.

We laid out a dummy leaguer about 15 miles away and, every night, squadrons carried out an exercise navigating on a zigzag course which eventually brought them to the "enemy" leaguer, which they had to attack in the dark. Each squadron was given a different course—so many miles on one bearing—so many miles on another bearing—and so on. Each battalion had battalion and squadron navigators (with their own special trucks fitted with tank compasses and also their own special navigating tanks), who had to pass tests in day and night navigation. The role of the navigating officers, if we had to fight my delaying action, was to keep out of the battle, hang on to the German armor at a respectable distance in their fast trucks, and locate the night leaguer. They would then report back to navigate the brigade for the night attack.

Of course my scheme never came off, as we did not have to fight that particular battle. But the result was that when operations started the brigade was 100 per cent night trained. You know the story from then on. At El Duda we lost a squadron and the New Zealanders had very heavy casualties in an abortive attempt to join up with the Tobruk Garrison by day. I then went to Freyberg and suggested we should try by night. Practically a bloodless victory. So, flushed with our success, we repeated the business at Bardia. Again practically a bloodless victory with a good many thousand prisoners.

The El Duda operation was carried out on the night of 26 November 1941 by a battalion of New Zealand infantry led by two squadrons of the 44th Royal Tank Regiment. Of the battle, Lieutenant General Sir Willoughby Norrie, then commanding general of the XXX Corps, wrote:

The task of facing the formidable Bel Hamed position and breaking through some 3½ miles of enemy defenses under the observation of Rezegh was a heavy one. It was, therefore, decided to make the breakthrough at night with a battalion of infantry led by two squadrons of tanks. The plan was to go straight through to El Duda with no attempt at consolidation. This attack was a complete success, the novelty of being attacked by tanks at night caused the enemy to abandon his strong position and the tanks and infantry got through to their objective practically without loss, joining hands with the Tobruk Garrison at El Duda.

This operation was a perfect example in miniature of what could be achieved at night by well-trained, high-quality troops against a strongly defended position.

The Bardia operation to which the commander of the First Army Tank Brigade refers took place on 1 and 2 January 1942. In this instance a divisional attack, sup-

ported by two battalions of infantry tanks (8th and 44th Royal Tank Regiments), was to be launched against the strongly fortified position at Bardia. The original plan proposed by the commanding general of the 2d South African Division was for a head-on daylight assault with tanks leading. Such an operation would have been immensely costly. It was extremely doubtful whether the leading tanks would ever have reached the main defensive position.

A counterproposal for a night attack was put forward and after some discussion was adopted. It was put forward in the form of a written estimate, of which the aim was "to capture Bardia with the minimum loss to ourselves." The plan was for a 2-phase operation. Phase I was to be a "break-in" by an armored regiment and two battalions of infantry with strong engineer support, to breach the minefields and antitank ditch. Phase II was to be the followup at dawn by four infantry battalions with one armored regiment. Phase I was completed almost without incident. A strong German counterattack unfortunately overran the left hand battalion just before Phase II was due to start. This resulted in the postponement of Phase II until the following night when it was carried out with complete success.

The second phase was very deliberate, with the assault force moving in two echelons. The first echelon, consisting of tanks and engineers only, moved forward with two squadrons up on a frontage of 2,000 yards. The second echelon followed at normal infantry pace dealing with any points of resistance which the leading tanks had bypassed. The third squadron of tanks was part of the second echelon. In spite of various minor delays and mishaps the overwhelming moral ascendancy gained by the attackers over what was, potentially, a most resolute defense, resulted in the capture of many thousands of prisoners and large quantities of equipment. For an operation of this size, the casualties suffered

by both tanks and infantry were almost negligible.

Even this resounding success seems to have been almost unnoticed by the eyes of our military historians. In his history of World War II, Major General J. F. C. Fuller baldly states, "On 2 January 1942 Bardia was stormed by the 2d South African Division. . . ." In fact, Bardia marked the beginning of a new era in tank warfare. Those diehards who had for years insisted that night attacks by tanks and infantry were impossible had been utterly confounded.

Lessons

Space has not made it possible to describe these two actions in detail, but a study of current reports shows that the following lessons were learned and were reflected in later operations:

A determined and well-trained force of combined arms can assault and seize by night a strong defensive position against which a daylight attack by a far stronger force would be impossible without incurring heavy losses. Night attacks save lives and equipment.

The effect of surprise upon the morale of the enemy will frequently be the deciding factor in the battle.

It is of primary importance to maintain the momentum of the attack.

The maintenance of direction can be assisted by: moonlight, use of tank compass, artillery fire, Very lights, and route marking (particularly for troops who are following behind the assault echelon).

The following cardinal principles of successful tank-infantry cooperation are even more important by night than by day:

Good communications between tanks, infantry, and guns are vital.

From the line of departure to final objective, control of the assaulting element should normally be vested in the armored commander. It should pass to the infantry as soon as consolidation is commenced.

Plans must be simple and be thoroughly understood by all taking part in the operation.

Tanks must withdraw into a counter-attack role as soon as the infantry supporting weapons are established on the final objective.

A well-trained enemy will regroup quickly after being dislodged and may well counterattack before consolidation is completed.

Subsequent operations during 1942 taught a further important lesson: Where adequate forces are available to provide a reserve element for exploitation, the degree of success achieved will be increased out of all proportion to the additional effort required.

North Africa, 1943

Our first two examples have shown the value of tanks and infantry at night against a prepared position. The devastating effect of the bold use of mechanized forces at night against a strong enemy, which is partly off balance after a long withdrawal and a series of hard knocks, is graphically described by Alan Morehead in his book, *The End of Africa*.

Toward the end of the Tunisian Campaign large enemy forces were withdrawing to an immensely strong defensive position across the Cape Bon peninsula. Realizing the supreme importance of forestalling the enemy's efforts to establish himself in this fortress, Field Marshal Alexander ordered the 6th Armored Division to cut across the neck of the peninsula on the night of 8 April 1943. So shattering was the effect of this attack that within 4 days over a quarter of a million Germans and Italians had laid down their arms.

The following lines from Morehead's description of the action show how surprise was "successful to a high degree" with "confusion and broken courage in the enemy's ranks as the consequence":

They broke clean through to Hammamet

inside the next 10 hours. They roared past German airfields, workshops, petrol and ammunition dumps, and other positions. They did not stop to take prisoners—things had gone far beyond that. If a comet had rushed down that road, it could hardly have made a greater impression. The Germans were now entirely dazed. Wherever they looked British tanks seemed to be hustling past. . . . The German generals gave up giving orders since they were completely out of touch. . . . In a contagion of doubt and fear the German Army turned tail . . . the army became a rabble. . . .

Those who criticize the British Army for being too slow and too ponderous to exploit its opportunities would do well to consider the truth of their contention in the light of this model operation.

Normandy, August 1944

The operations we have considered, although achieving remarkable results, were on a relatively small scale, at any rate as far as the degree of artillery and air support available were concerned. Operation *Totalize* was mounted by the II Canadian Corps on 7 August 1944.

Its first phase was a night attack in force by two infantry divisions, each supported by an armored brigade, to break into a strong German position opposite Caen, astride the Caen-Falaise road. Two armored and one infantry divisions were available for later phases of the operation. It is with the break-in phase that we are concerned.

The 21st Army Group, of which the II Canadian Corps was a part, landed in Normandy with the greatest weight of artillery and air support yet made available to British forces in World War II. In addition, a number of new mechanized and armored devices had become available, which were specifically designed for use in operations against prepared defenses. These devices included flail tanks for

breaching minefields, *Crocodile* flamethrowers, and armored vehicles Royal Engineers (AVRE's), which carried engineer supplies and mobile bridging for obstacle-crossing.

During the earlier battles after the landing, use had been made of searchlights to aid troops in night attacks. The lights were so directed that the reflection from the clouds produced an effect very similar to moonlight. This device, known as "artificial moonlight," was available for *Totalize*.

The problem facing Lieutenant General Simonds, the corps commander, was complicated by two main factors:

The ground, which sloped upward to the south, was particularly suited to antitank defense. A number of villages dotting the area had been turned into mutually supporting strong points. Not less than 60 dug in armored vehicles and ninety 88-mm guns were covering the frontage to be attacked.

Continual probing against this position had made the direction of attack and choice of objectives clear to the enemy. Surprise could, therefore, only be achieved in timing.

Faced by an enemy consisting of two battered SS Panzer divisions and one untired infantry division, General Simonds appreciated that his initial problem was to penetrate the gun screen and mortar areas with his armor. To do this he would require an infantry force immediately available to take over from the armor after reaching its objectives. The requirement, therefore, was to get the infantry to the right place at the right time, fresh and ready to fight.

A bold and imaginative commander, he decided:

That the attack must be made under the cover of darkness.

That the infantry must accompany the tanks in armored vehicles.

As stated, the first phase of the corps plan, was a break-in operation by night by

two infantry divisions, the 2d Canadian and 51st Highland, with strong armored support. This attack was to seize objectives immediately north of the main enemy position, which would then act as firm bases from which Phase II, an attack against the main position by an armored and infantry division, would be launched at 1400 on the following day.

To provide armored protection for the assaulting infantry about 60 self-propelled guns were adapted for troop carrying by the removal of their armament and the welding on of additional plate to cover the gap thus created in the front armor. Thus were the first armored personnel carriers (APC's), as we now know them, produced. In addition, a number of half-tracks and scoutcars were assembled to carry those infantry for whom there was no room in the APC's.

The accompanying sketch map shows the routes, detrucking areas, and objectives for the eight armored columns which were so formed. These columns contained a proportion of flails, one regiment per division and, assault engineers, one squadron per division. The remaining infantry, who were to clear up those centers of resistance which were bypassed by the armor, were to advance on foot. A glance at the map will show how difficult a task this was. One squadron of *Crocodiles* was available to support each division in this role.

In order to demoralize the enemy to the greatest possible extent, it was decided that, apart from the normal counterbattery fire, there should be no preliminary artillery bombardment but that all the heavy bomber effort available for ground support should be laid on to shatter certain strong points on the flanks (see sketch map) immediately before the attack was launched. The plan called for about 650 bombers to drop 3,500 tons of bombs.

A formidable weight of artillery was to fire a barrage 4,000 yards wide by 6,000 yards deep. This was to move in 200-yard

lifts at a rate of 100 yards per minute. The problem of maintaining direction was clearly of major importance and the following aids were, therefore, to be provided: artificial moonlight, *Bofors* guns firing tracer along the flanks, marker shells along the interdivisional boundary, taping and marking with lights by engineers, directional radio, the "surveying in" of the navigating tanks upon their thrust lines, compasses mounted on navigating tanks, and aerial photographs.

The corps commander had hoped to have a full week for preparation and training but the force was not assembled until a bare 48 hours before the attack. However, the fullest use was made of this brief opportunity to practice entrucking and detrucking from the APC's and to enable the armor and infantry to get to know one another. During this period it was decided that the directional radio was not sufficiently accurate to be of real assistance and its use was, therefore, abandoned. In general, it would be fair to say that the troops assembled for the attack were as fully briefed and as well rehearsed as would normally be possible under such conditions.

The first bombs were dropped punctually at 2300. Half an hour later the columns started to move across the line of departure, raising a cloud of dust which, added to the dust of the barrage, almost completely obscured observation in spite of the use of artificial moonlight, which was merely deflected by the dust cloud. Fortunately, the moon came up at midnight and did much to improve visibility.

In the Canadian columns there was considerable delay in the area of Roquancourt through loss of direction. As a result, the detrucking areas were not reached until 0210 over an hour after the barrage had been completed. The bombing and the barrage had clearly not had the devastating effect which the corps commander had expected. Although some of the untried in-

fantry ran in terror, the SS men continued to hang on doggedly at many points, and the followup element had some difficulty in clearing the built-up areas on the right flank. Fontenay-le-Marmion and Amayés-sur-Orne were still in enemy hands at dawn.

On the left, the Scottish columns had a relatively easy run and casualties were light. However, considerable resistance was encountered by the infantry, who were endeavoring to clear the bypassed strong points. At dawn, Sequeville-la-Campagne, La Hogue, and Tilly-la-Campagne were still in enemy hands.

Two points which contributed to the delays of the advance are worth noting. First, the cratering caused by the heavy bombers produced obstacles in a number of places which even the tanks had difficulty in crossing. Second, the enemy was quick to realize the hampering effect that the dust was having upon movement and cleverly laid smoke in front of their positions to increase the confusion—which it certainly did.

Although all the enemy strong points forward of their main position had been cleared by about 1530 on 8 August it was a costly business, and Phase II did not really get off to a good start. As a result, the degree of exploitation which might have been expected after so heavy an initial assault was not possible, and the operation as a whole can only be regarded as a partial success.

Experiences

Compared with those night operations which we have already studied, this first phase of Operation *Totalize* was of great complexity and involved a considerable expenditure of military effort.

Since experience had already shown the importance of simplicity in operations of this type, it was clear that however unavoidable the complications might be, the plan was bound to involve a fair measure

of risk. Fortunately, the risk was principally that of failure to achieve the aim and thereby losing a golden opportunity to trap the bulk of the German armies in the west rather than of suffering a major reverse through heavy casualties in men and equipment.

A study of the plan for the entire operation shows two principal weaknesses:

1. The long gap between the planned completion of Phase I and the estimated start of Phase II, which meant an inevitable loss of momentum and failure to exploit properly the successes gained in Phase I.

2. In spite of the experience of Operation *Goodwood* about 3 weeks earlier, there was a failure to appreciate the speed at which the enemy would recover from the initial bombardments. *Goodwood* was a daylight operation east of Caen by three armored divisions. There was a preliminary air bombardment by over 2,000 bombers. Enemy casualties were very few and over 150 tanks were lost by the attacking divisions to antitank guns. Although some ground was gained, the results were not commensurate with the expenditure of effort.

However, as far as Phase I was concerned, the move of the armored columns was undoubtedly a success and vindicated the decision to attack by night. The following new lessons added materially to the knowledge already gained on the subject of night attacks in the Middle East and in North Africa.

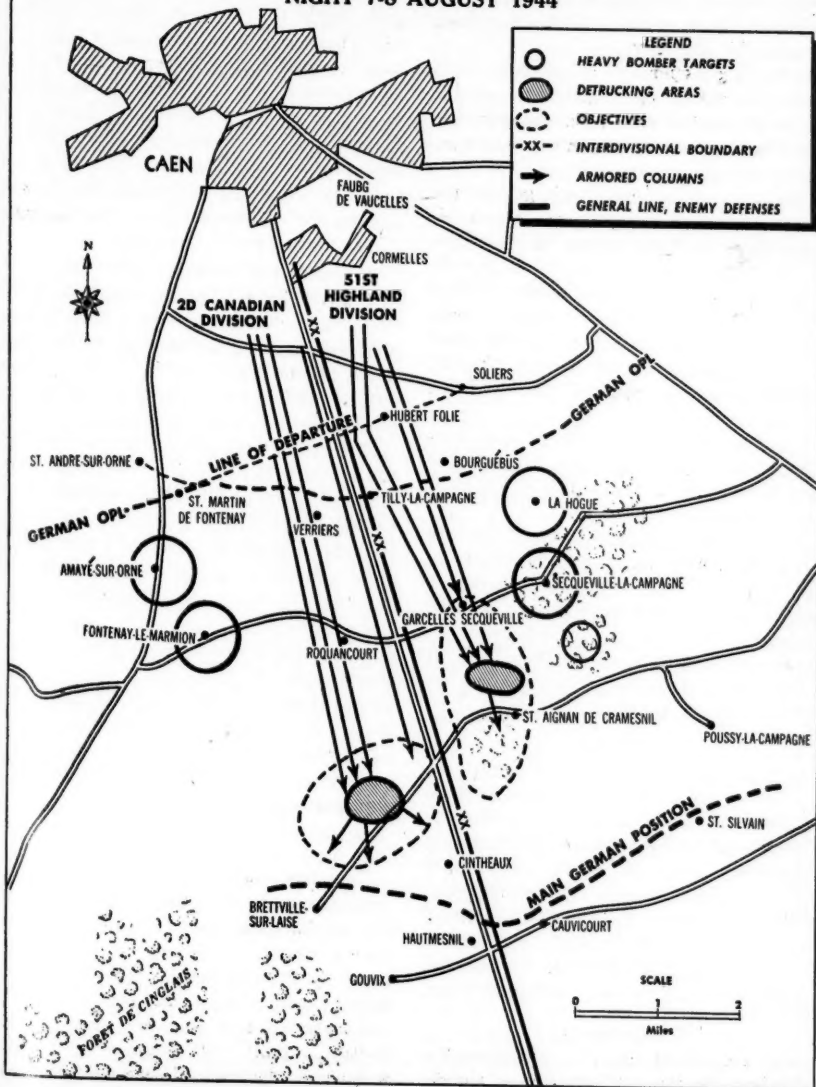
1. Use of artificial moonlight, together with *Bofors* tracer and artillery marker shells to assist in the maintenance of direction.

2. Value of APC's for the movement of the assaulting infantry.

3. Importance of a flexible fire plan as delays in movement resulted in the barrage outstripping the advancing troops and the operation being completed without proper

OPERATION TOTALIZE

MOVEMENT OF ARMORED COLUMNS
NIGHT 7-8 AUGUST 1944



fire support, in spite of the vast amount of artillery available.

4. The extreme difficulty encountered by the infantry in clearing in the dark well-prepared strong points which have been bypassed by the armor.

5. In a night operation of this magnitude some measure of confusion is inevitable but the casualties so caused are infinitely less than those which the enemy would inflict by day.

The broad principles which govern the successful use of troops in the attack by night apply as much to the smallest raid as to large-scale operations similar to *Totalize*. No reference has, therefore, been made to the use of airborne or commando troops both of which operated with great success at night during World War II, notably during the opening phases of the Normandy invasion.

To sum up, these principles are: surprise, simplicity, cooperation, flexibility of communications, maintenance of momentum, and exploitation.

A plan in which these principles are given due and balanced consideration should have a more than even chance of success, subject, of course, to the relative strengths of the forces engaged. However, as was shown both at El Duda and at Hammamet, this factor does not carry the same weight by night as by day.

Defense

German experience in the Soviet Union and our own in Korea has shown that when defended localities are correctly sited in depth for all-around defense, are mutually supporting, properly wired, and mined, with an adequate measure of artillery support, there is little for the trained infantryman to fear from the night attack. There is, in fact, no magic in the successful defense of a prepared position at night.

Counterattack

We have already seen in Operation *Totalize* how the tough SS element of the de-

fense held on to their positions, in spite of having received a formidable battering from the air and artillery fire. They were not, in fact, dislodged until noon of 8 August, and by their tenacity imposed a severe delay upon the operation. Had it been possible for the Germans to launch an effective counterattack at dawn that day the success of the entire plan might well have been jeopardized. This question of counterattack provides the essential difference between day and night defense, for it will seldom, if ever, be possible to counterattack during the hours of darkness.

At Bardia the Germans showed the value of a swift, limited counterattack at dawn when they overran the left flank South African battalion at the end of the first phase of the battle. By their prompt and effective action they forced the attacking commander into a choice between attacking late in broad daylight or waiting 12 hours for darkness to fall again. This was a convincing demonstration of the importance of having a highly mobile counterattack force available whenever possible. After a long night's fighting the attacking forces will inevitably be tired and in some confusion. Their antitank defenses are likely to be disorganized at dawn because of a lack of observation. A short, sharp crack at this time will achieve more far-reaching results than a much weightier affair some hours later, when their defenses have been sorted out and observation is available for both guns and aircraft.

Artillery Support

The intimate and effective support of the infantry position by artillery is one of the fundamental requirements of the defensive battle. In Korea, where night attacks by the Communists had become almost commonplace, it had been repeatedly demonstrated that even the strongest infantry assault will stagger under the weight of accurate defensive fire, com-

combined with the full blast of the infantry's small arms and mortars.

It is likely that the enemy will precede his night attack by a sharp counterbattery barrage. It has, therefore, been found advisable for artillery to occupy alternative positions at night to those from which they have been firing by day. The Communists are experts at this form of deception and it is frequently most difficult to locate their true gun positions because of the large numbers of excellent dummies they have prepared.

Morale Factor

We have already discussed the importance of gaining surprise when launching a night attack and have seen the effect which that surprise had upon the enemy's morale at El Duda, Bardia, and Hammamet. In Operation *Totalize*, where the degree of surprise achieved was limited by the previous circumstances, we found that it was not sufficient to throw the seasoned troops off balance and that it was only the untried troops who ran. In Korea the enemy found it most difficult to achieve surprise against men who demonstrated that the answer to the night attack was to sit tight and fight back with every available weapon. Even his infiltration tactics largely fell flat since his own position quickly became untenable if the defending "hedgehogs" refused to be shifted. Both in Burma and in Korea it was soon noticed that the morale of the defending troops was adversely affected by the lack of rest and sleep resulting from repeated incidents at night. In Burma, Japanese patrol activity was often expressly designed to achieve this end. The simple remedy of enforcing rest by day whenever possible did much to counteract the enemy's efforts.

Fatigue caused by exposure to extreme cold and wet poses a far more difficult problem. There is no doubt that the majority of Communist troops, who stand up to privation far better than their Western

counterparts, have an advantage in this respect. During the winter of 1942-43 the Soviets proved that they had learned a sharp lesson from the Finns who, in 1939, had harried and ambushed their supply columns at night after lying out for many hours in the snow waiting for darkness to fall. Arvid Fredborg, a Swedish journalist who spent the war in Berlin, quotes a contemporary German commentator who wrote of the Soviets' insensitiveness to weather and terrain:

Whoever plans to defeat the Soviets . . . must be able to orient himself at night and in fog as well as by day as the Soviets almost always attack in fog or at night and time and again have surprised the Germans.

In Korea this problem was largely overcome by good training and by the construction, where possible, of bunkers with overhead cover and protection from the icy Korean wind.

Summary

In general, the problem of defense at night may be solved by the application of well-tried defensive principles, special stress being laid upon all-around protection, mutual support of defended localities, simple and effective measures for counter-attack (at dawn), full coordination of the defensive fire plan, and training.

Future Developments

We have seen how, in the two principal phases of war, night fighting has developed to a point at which it is possible to say that it presents no special problems to well-trained troops insofar as the present limitations of their equipment allow them freedom to move and shoot in darkness. The difficulties of applying direct antitank and small-arms fire at night are obvious, but owing to the limitations imposed upon movement and the preponderance of the morale factor, the general requirement to

date has been to neutralize the enemy rather than to destroy him by direct fire. If, by the introduction of simple aids, we can enable targets to be engaged almost as easily by night as by day, we shall greatly improve the position of the defender and we may hope to see the time when he will achieve better results against an enemy groping toward him in the dark than he will against the same enemy by day. In a nutshell, our chief problems are to see where we are going and to be able to shoot straight.

Artificial Moonlight

Throughout the campaign in northwest Europe, artificial moonlight was used with varying degrees of success. Because the light is reflected onto the area in which it is required, this device is more effective in cloudy weather than on a warm summer night when there are few clouds and frequently some natural moon. We have already seen how the dust clouds on *Totalize* rendered artificial moonlight almost useless and how in the end it was the real moonlight which saved the situation.

In February 1945 artificial moonlight was used with great success in the Reichswald when *Buffaloes* operated in mass on several occasions across the inundations; here the illumination was excellent since the weather was cloudy and the added reflection from the water increased the effect of the searchlights. At about the same time, it was employed under snowy conditions during Operation *Blackcock* in the clearing of the Roer triangle. The reflection off the snow made night like day and greatly simplified negotiation of the very poor going.

This, then, is a device which can prove invaluable when correctly used. We have as yet had but little experience of its use in defense, but its potentialities are considerable and we would do well to exploit them to the fullest in training.

Canal Defense Light

A great deal of time and many millions of dollars were expended during the war on the development of canal defense light (CDL) tanks.

General Fuller has defined CDL and its aims very clearly:

The CDL was an infantry tank fitted with a powerful projector of special design emitting a fan-shaped flickering beam of light which illuminated a wide field and dazzled the eye. The projector was so protected that it could not be put out of action by anything less than a direct hit by a shell which could penetrate 5 inches or more of armor.

The object of this weapon was to solve the problem of night fighting on a large scale, enabling an attack to be carried out more methodically and rapidly than during daylight, and far more economically and securely; for whereas the field over which the attacker advanced was brilliantly illuminated, all the defender was able to see was a wide expanse of dazzling light which obscured everything behind it, and which was so brilliant that it rendered aimed fire impossible.

The letters CDL stood for canal defense light, a name adopted in order to conceal its true use and purpose. Like the word 'tank,' it was a verbal camouflage.

The story of the CDL muddle has no place here, but the plain fact is that in spite of the effort and expenditure given to this project, it was hardly used in northwest Europe. Even then, it was employed only in penny packets and never on the scale envisaged by its protagonists.

When employed in the Rhine Crossing, both to provide movement light and, later, for guarding the bridges and ferries against floating mines, midget submarines, frogmen, and other hazards, and by the Americans in the crossings over the Dort-

mund-Ems Canal and the Elbe, CDL produced excellent results. While it is easy to be wise after the event, one cannot help wondering what tremendous results might not have been achieved on *Totalize* and at Falaise had CDL been used boldly and imaginatively.

The following comments by Lieutenant General Diestel of the 346th Infantry Division concerning the German withdrawal to the Seine gives further food for thought on the possible uses of CDL.

When we had been thrown back during the day, we always knew that there would be a pause at night when the enemy would regroup for the next day's operations. It was these hours of darkness which enabled us to retire without suffering many casualties.

While it is still possible to obtain the advice of men experienced in the use of this weapon, we should take every step to test its potentialities in the field with troops.

Direction Keeping

The experiences of *Totalize* showed how great is the need for a simple direction-keeping device for use at night, particularly in setpiece operations. They also showed, however, that the simplest expedients developed from equipment already available were extremely effective, such as the use of *Bofors* tracer, marker shells, and white tape.

If a small man-pack directional radio set could be produced which was simple in operation and gave a satisfactory degree of accuracy, it would be of inestimable value. A similar set for mounting in tanks and other armored vehicles is also required.

Specialized devices of this type have proved fallible in the past and, in training, improvisation from existing resources should always be practiced in addition to the use of directional radio.

Direct Shooting

Various infrared devices to enable the infantryman or antitank gunner to engage targets in the dark were produced by the Germans and the Allies during World War II. Experience both in war and peace has shown that this equipment has limitations which may or may not be overcome. From the point of view of the antitank gunner it seems probable that since ground-to-air guided weapons are now generally accepted to be "just around the corner," we may expect before too long to have a similar weapon for ground-to-ground shooting. Such a weapon would help considerably to nullify the morale effect of tank attacks at night—the homing device is no respecter of light or darkness.

Flame

It will be remembered that two squadrons of *Crocodies* were made available to the II Canadian Corps for *Totalize* and that they were allotted to the infantry who were "cleaning up" behind the armored columns. There is little information to show how successfully these tanks were used in this role; but in a description of the crossing of the Wessem Canal on the night of 15-16 November 1944, the historian of the 79th Armored Division wrote:

That night A Squadron (1st Fife and Forfar Yeomanry) flamed across the Wessem Canal for the 53d Division; the effect in the darkness was devastating and the enemy greatly demoralized.

Flame is primarily a morale weapon and we should make the fullest possible use of it as such in future night operations.

Traffic Control

The congestion caused by vehicles at night can easily prejudice the success of an operation. This point has already been referred to in connection with *Totalize*. In

that particular case, it was one of those "unseen" lessons which arose from "what might have happened."

This problem, however, is not confined to night operations and can be solved by good training and clear-cut standing operating procedures, rigidly enforced.

Training

This is the key to the entire problem.

A high standard of training creates efficiency and breeds confidence. This high standard is not easy to achieve under present conditions. In all formation and unit exercises, both with and without troops, great emphasis should be laid upon the problems created by night fighting and the means by which those problems can be

overcome by the use of equipment already in the hands of the army. In this way, all arms will gain experience in peace of the basic requirements of night fighting and acquire that confidence and skill which will make it possible for them to operate efficiently at night in war.

Although we still have much to learn, it cannot be said that night fighting is in its infancy. Experience has shown that with the resources already available to us, with good training and careful, simple planning, British troops can operate with great efficiency by night. While future scientific aids may make our task easier, we now have the basic know-how and equipment with which to train ourselves to the high standard which is required.

Panic in Battle

Translated and digested by the MILITARY REVIEW from an article by former Major General Hans Kissel in "Allgemeine Schweizerische Militärzeitschrift" (Switzerland) Issues 9, 10, 11, and 12, 1955.

FEAR is the result of sense perceptions with which the person concerned—rightly or wrongly—connects the idea of acute danger to his life or personal welfare. Since it is one of the most basic emotions, all persons are subject to it, although to different degrees depending on the susceptibility of the particular individual.

Since war means danger, fearless men are best suited to be soldiers. These, even in the most fearful of surprise attacks, are but little moved, and are least susceptible to panic. Their number is so small, however, that no modern armed force can be recruited from men of the "unafraid" type alone, and this quite aside from the fact that only a part of these are suited for use as leaders.

The ordinary human being shows his bravery by overcoming his fear by the power of his will. The individual who is thus able to retain his inner equilibrium and the unimpeded use of his powers of reason is to be counted among the brave and to be considered the equal of the unafraid. The inborn instinct of the human being not to appear cowardly, his sense of duty toward his country, and his natural feeling of comradeship with its mutual aid in times of need and danger are the usual forces that sustain him. For those individuals who have limited willpower, discipline and fear of punishment sometimes serve as props to keep them in line.

If an actual or imagined danger suddenly arises, alarm may increase to fear,

and fear to terror. Depending on his subjective makeup, the individual who is overcome by terror, becomes prey either to an incapacitation which makes him incapable of any action, or gives himself over to purely instinctive action whose objective is solely the preservation of his life.

Crowd Effects

Individuals who succumb to shock effect very often quickly regain possession of their senses. This is different in the case of the crowd, which term, in its usual sense, is understood as merely an assemblage of individuals. In the psychological sense, however, the expression "crowd," possesses another meaning. For the "psychological crowd," under certain conditions—and only under these—possesses characteristics which are very different from those of the individuals of which it is composed. A thousand individuals gathered together by chance in a public place without a single, definite purpose, by no means constitute a crowd in the psychological sense. In order for it to take on the particular characteristics of a crowd in the latter sense, it needs the influence of certain incitements. Not until such an incitement occurs—for example, a psychic shock as the result of an actual or supposed danger—is a collectivity which follows its own laws formed from the sum total of the individuals. Conscious personality disappears, and the feelings and thoughts of all the individuals are orientated in the same direction. A collective mind is formed which, although not always the same, is of a decidedly definite type.

The particular characteristic of this collective mind is determined and marked by two phenomena: in the crowd, the individual attains a feeling of strength which permits him to abandon himself to impulses and actions which, if left to himself, he would have curbed. Also, he often lends himself to feelings and actions that are entirely contrary to his nature as an individual.

We perceive from a consideration of this collective mind why panic is contagious, and why, in contrast to the case of an individual who is prey to shock, it takes considerably more time for it to die out and for the "psychological crowd" to disintegrate.

Military panic also follows "the law of the mental unity of crowds." The release of the instinct for self-preservation and the disappearance of personal sense of responsibility loose the bands of discipline and turn a unit into an uncontrolled crowd. This spells the end of its value as a combat unit. Such a "mass individual" becomes a menace to all the units in its vicinity.

Forms

Panic occurs in two forms: as incapacitating panic and as panic leading to certain acts. The first leads to nonshooting and to surrender without resistance; the second to senseless random shooting or the shooting of one's own troops and almost always to panic-induced flight.

The problem of nonshooting has recently been given prominence by the studies made in the United States Army. According to these studies in World War II and in the Korean conflict, at least 75 percent of well-trained and battle-experienced infantrymen and, in the case of fresh units even 85 percent of all infantrymen, made no use of their weapons in battle. As S. L. A. Marshall comments:

The unit commander soon notes that it is difficult to get the men out from under cover because of the enemy's bullets and the fear which they produce. The man who is prey to fear has no willpower; he cannot even bring himself to think of active participation.

There were also numerous "nonshooters" in the German infantry. Although their percentage is not known, it may be assumed that it was lower than with the

American infantry, not only because the German rifle squads were smaller and therefore more easily kept under surveillance, but their training was strongly based on team like collaboration—fire combat in the framework of the field squad—and in defense “squad nests” in place of individual foxholes.

Surrender without resistance occurs when an attacker meets a defender who has become psychologically incapacitated as a result of fear or for other reasons. This frequently occurred during the cold winter of 1941-42 when German soldiers, without winter clothing, apathetically lapsed into a drowsy state in their snow shelters, no longer capable of any action.

Senseless random shooting and, above all, firing on one's own forces often result in heavy losses, always loss of time and, chiefly in impairment of morale. Often, mutual firing on one another on the part of one's own forces, gives rise to panic-induced flight.

Size of Units

In contrast to the individual rifleman who, as a rule, can very quickly be brought to his senses again, it takes considerably longer in the case of the panic of a “psychological crowd” for the impulse to subside or disappear because of the consciousness of strength and mutual influence that is characteristic of the crowd. It may be stated as a law that the intensity and duration of a flight impulse are the more persistent the larger and more compact the crowd is when it succumbs to the psychic shock.

From this we see why, in military units which are compactly assembled in a narrow space, a panic which breaks out at a single place can sweep everything along irresistibly like a river which has broken out of its banks and why, when fighting was conducted in compact formations, such a flight-inducing panic was able to sweep

away an entire army and suddenly cause the battle and not infrequently the entire campaign to be lost.

In the era of the decentralized battle and of the army fighting in small units, most panics, because of diminished suggestive influence, will be only local episodes if successfully suppressed in time. To accomplish this, of course, a large number of capable commanders will be needed who by their example and energy will be able to intervene at the critical moment. If this is not the case, a flight wave will develop out of the individual cases of panic which will roll less precipitately but on a very broad front toward the rear.

Kurt Hesse gives, in his masterful description of the battle of Gawaiten-Gumbinen, an example of how a general flight movement began from numerous local panics and caused the loss of the battle. The collapse of the French Army in 1940 is to be judged in a similar manner. The numerous individual cases of panic at Moscow at the turn of the year 1941-42 carried the German Army to the brink of collapse from which it was never again fully able to recover.

No Change

Experience shows that in battle, the psychic and physical forces of a unit are almost always strained to the utmost so that the unit, as a rule, has the feeling of being “at the limit of its endurance.” As a rule, the impression will also prevail that the unit is short of some weapon or other. On the other hand, surprise and thoughts of nonexistent or only slightly threatening danger very seldom constitute the cause, while other things, such as acts of extreme disobedience, are more often the cause of untoward events which we must definitely designate as panic.

While strategy and tactics are subject to constant change, human beings, with their weaknesses and defects, remain the same.

We read in a study of the psychic forces of the German soldier in the Franco-Prussian War that even in times when flaming patriotism influences the soul of all, the enthusiasm of most individuals wanes at the threshold of death, egoism triumphs over idealism, physical weakness over force or courage, and the desire to remain alive over the willingness to die.

Concept

Since "adequate reasons" for a movement to the rear are almost always evident, or can be advanced and, since, at the same time we are often unable to distinguish between disobedience and psychic defect, the concept of military panic needs to be considerably broadened. We must designate as causes of panic all those untoward occurrences during combat for which there was no material reason and which result from psychic failure or from lack of readiness on the part of the soldiers.

Finally, attention must be called to two other phenomena that were to be noted in all the cases of panic which the author personally experienced in two great wars. The flight to the rear included the majority of the forces as a rule but not all the men. A number of these always remained behind in their position and continued to fight bravely and apparently unmoved by the departure of their comrades. All rear detachments proved especially susceptible to panic since they generally are less battle-experienced, frequently fail to maintain the prescribed degree of attentiveness, and their customary compact formations favor the spread by suggestion of psychic shock. One of the greatest sources of danger is the mass of stragglers in whose ranks, naturally, are already large numbers of persons of a timorous nature. It is necessary to prevent the formation of such masses of individuals.

In the battle at Adua on 1 March 1896, the advanced left wing of the Italian Army was caught in a surprise attack by the

Abyssinians. Seized with terror, this wing came pouring back in disordered flight. No entreaty, no command, no threat, and not even the safety of the Italian center was sufficient to halt the fleeing men. They fled completely past their line, interfered with its fire, appeared to regard the officers who were attempting to save them as their worst enemies, threw away their guns, ammunition, and packs and allowed themselves to be slaughtered. Thus a well-trained army equipped with the latest weapons was beaten and completely annihilated by a mob of Abyssinians who, although numerically superior, were armed only with lances.

In the Russian Campaign of 1941-45 innumerable panics occurred on both sides which often exerted a decisive influence on the outcome of the fighting and battles.

The extreme cold, with its crippling effect on all physical activity, and the critical loss of confidence of the troops because, contrarily to the reports of the top political leaders and in spite of indescribable efforts and great sacrifices, the enemy had not been beaten and was even able to conduct counteroffenses had, psychologically, laid the foundations for panic. Little cause was needed to incite panic. The will to fight had almost entirely subsided. Many units which had fought outstandingly well simply could no longer hold against the enemy. As a result, failures in combat became increasingly frequent, causing greater demands on other units and generally additional weakness.

The danger was greatest at Moscow, where as the front became untenable, the troops would begin to fall back. If this occurred, however, the completely exhausted troops, after a few marches in the snow and ice, would have succumbed to moral disintegration. In another work we read:

The enemy threat in the direction of Terayevo gave rise to disintegration phe-

nomena. . . . The increasing pressure, the flanking fire on the withdrawal route, and the growing danger of being cut off increased, in the weak, the instinct of self-preservation. The situation on the only withdrawal route available to the 3d Armored Group worsened. Elements of the army forces attempted, on the grounds of orders which they had been given or perhaps on their own authority, to hurry to the rear. And more and more individual soldiers and small groups of soldiers with or without their arms, in individual motor vehicles or on foot, attempted to reach a place of safety in the rear. They scarcely had any conception of how greatly they were needed in the battle.

This description reveals innumerable cases of local panic which led to widespread panic-stricken flight. Between the trains of vehicles rolling toward the rear, the groups of stragglers hurried westward. The specter of general disintegration, even of mutiny, threatened.

Causes

In this situation, only the order "Not another step to the rear!" and stern action joined with the personal example of the officers and commanders succeeded in halting the panic and putting an end to the disintegration phenomena. The normal readiness for action of the troops returned and despite the enormous losses in personnel and matériel and although no reinforcement of any consequence could be given them, the front again grew firm. This seems to prove the point that it was less the material action of the Soviets that brought the German Army to the brink of catastrophe, than the psychic and resulting physical failure of the men which appeared in its military form in the innumerable cases of panic-induced disability and flight.

As the examples show, only a shock or provocation operating from the outside is needed to "spark" a panic. Unfortu-

nately there are many chances for this provocation in war which cover a gamut ranging from actual threats on down to pure illusions. The more unexpectedly such a shock occurs, the less significant does it need to be.

There is, however, a second factor which is of influence in the occurrence and magnitude of a panic; namely, the subjective disposition of the soldier. The more unstable this is, the more tenaciously the panic will operate. Thus, two causative complexes lie back of every panic: the latent, subjective disposition possessed by the soldier, and an objective, outer provocation.

First, the national character is significant. As military history teaches, there are peoples who are susceptible to panic and others who are not. An army is little susceptible to panic when it has within its ranks a large percentage of individuals who are unafraid and of strong will, who in battle according to Clausewitz "achieve complete unconcern and natural elasticity of mind."

The idea that a high stage of civilization increases susceptibility to panic is a fallacy. The Englishman, for example, has always shown himself very immune to panic, while the South Koreans—at least during the first year of the Korean conflict—were quite susceptible to panic. The German troops in both wars were considerably more immune to panic than those of most of their allies, whose stage of civilization was considered lower.

Poor morale in an army creates a favorable soil for panic, while good morale results in little susceptibility to panic. Good morale is based primarily on the fact that the soldier is convinced of the rightness of his cause and of the necessity of fighting and that he believes in the possibility of victory.

The good combat morale which characterized the German soldiers of World War

I and World War II was based to a decisive degree on the fact that he was convinced that he should defend his Fatherland. The enthusiasm with which the soldiers went into the campaign and fought, and the hundreds of thousands of volunteers who hurried to the colors in World War I prove this assertion. In World War II there was no enthusiasm and few volunteers. However, "the German spirit was fantastically good," according to General J. F. C. Fuller.

In the case of the Russian, his willingness to fight and immunity to panic were increased to the extent that he arrived at the conviction that he had to defend his fatherland from a perfidious invader and to the extent that his faith in victory grew.

In colonial wars, or in wars which may be felt to be such, outstanding combat morale is seldom to be expected. The knowledge on the part of the soldiers that they belong to an army that is well equipped with modern matériel, also favors good morale. This makes the initial engagements easier. The statement of an old general that "the best remedy against panic is brilliant initial successes," contains a great deal of truth.

Cohesion

The "alarm units," made up of soldiers on furlough, of men from the rear services, and other by chance available soldiers of all arms, which, in the innumerable critical situations of the Russian Campaign were thrown together and immediately rushed into battle, always showed themselves unusually susceptible to panic. They were seldom able to fulfill the missions assigned to them for the reason that at the first major threat, they scattered wildly in every direction and were annihilated. Also those groups of forces which in critical situations had to be taken out of their own units to be employed alone under a strange command in some other place usually fought with less spirit.

The greatest immunity to panic was shown by *solidly united formations*, hence, by those which belonged together organically and which had become welded together as the result of common training and experiences. The soldiers of such units are mutually acquainted with one another and know that they can depend on one another in combat and distress. Comradeship and tradition are no fictions, but realities which decisively influence combat willingness and ability. Every real unit possesses its own *esprit de corps*, which merits considerate handling. If, on the other hand, one allows such a unit to be worn down, neglecting to provide it regularly with replacements, it is dealt a blow from which it can hardly recover. For the reason that this point was neglected in the case of the German divisions of World War II, their combat morale steadily decreased.

It is further worthy of note that the heavy weapons crews are usually less susceptible to panic than the squads of the rifle companies. This is evidenced in the case of the American infantry in General Marshall's book, *Soldiers Under Fire*. From numerous descriptions of combat and from the personal observations of the author of this article, we find the same to be true in the case of the German infantry. The interdependent activities of the crew members and the fact that they are being watched by each of the other members forces each individual soldier to keep himself in hand. Even Caesar knew human nature and the importance of mutual observation in the above sense. Hence, he remarks, with respect to the disposition of his formations at Alesia: "The entire army was an eyewitness to the battle. No heroic or cowardly deed could pass unnoticed."

Numerically strong rifle squads and looser skirmish lines on the other hand make it easier for the individual soldier to shirk duty. Nonshooting is a failure of this type. Another form of escape from

duty is desertion from the unit. Groups of such deserters form where surveillance is insufficient. The "Maginot-mindedness" to which the French Army succumbed in 1940 also belongs, in part, to this same complex. The soldiers who should have defended themselves in the intervals between the fortifications, which possessed only field type works, often gradually disappeared into the safer concrete works, jeopardizing the entire defense.

For the foregoing reasons it is important, therefore, to base the organization, armament, and method of combat of the rifle companies on pronounced team like collaboration within the individual rifle squads.

Training

Insufficient *training* of men and officers, as already mentioned various times, also forms another cause which favors the occurrence of panic.

At Gawaiten-Gumbinen, the picture of the battle with the invincible Soviet defender was so extremely different from the peacetime exercises that the troops were not sufficiently able to withstand the effects of their adversary's fire. The results were uncertainty and doubt on the part of the troops, as a result of which the soil was psychologically prepared for the panics, which required only the slightest provocation to ignite.

Innumerable examples from both world wars indicate insufficient mastery of weapons as one of the basic reasons for strong susceptibility to panic. Faultless control of all combat functions can be expected only when all weapons training is drilled into the soldier. These functions must have become literally a part of each soldier so that he can perform them subconsciously and automatically. Hence, combat drill, as in the past, will continue to be imperative for all armies, and by this is not meant formal drilling on the parade ground, manual of

arms exercises, or rudimentary exercises from the era of close order combat formations. In addition to manually effected technical routines, tactical principles must also have become indelibly stamped on the mind of every soldier.

Defense means that the assigned position must be held to the last cartridge and the last man. In attack, the objective is to be reached. The abandonment of positions occurs only on order. A unit that has not mentally appropriated these concepts cannot be expected to look on retreat or even panic-stricken flight as a failure. For example, in the autumn of 1944 haziness with regard to the concept of defense on the part of certain Hungarian battalions under the author's orders led repeatedly to these forces' abandoning their positions at the least enemy fire in order to escape it. The fact that, and the manner in which, they were supposed to protect themselves from this fire was more or less unknown to them.

The command plan which has been drilled into the military commander serves him as psychological armor shielding his decisions from psychic shocks the fighting would produce.

However, the best of training is incapable of protecting the commander from psychic shock if the schooling of his men which makes for strength of mind and will-power has not also reached a high level. The main object of troop schooling is to awaken a realization of the absolute necessity for self-discipline and the need for its being taken just as much for granted as is technical combat drill.

On the other hand, it must be stated with equal clarity that there are soldiers in even the best units who obey only under compulsion and that "in the face of death" the best intentions of most men go down like a house of cards. In difficult situations, therefore, willing obedience will be found only in a minority. The majority obey be-

cause the obedience that has been drilled into them has become usual with them or because their fear of punishment is greater than their fear of the enemy's bullets. In cases where the latter fear is the stronger, however, it becomes necessary to act with Draconian means.

Strict Discipline

The almost legendary iron discipline of the Russian soldiers was no unexplainable enigma. Their obedience was based on the fact that they were conscious that they were being continually watched and that they could "feel the pistol pressed against their backs," and that they knew their refusal to fight would not only be followed by serious consequences to themselves but also to their families.

Innumerable American soldiers in Korea deserted—and at first more than a third of those remaining at the front succumbed to front neuroses. Not until nervous collapse began to be treated at the front and no longer in hospitals far to the rear, and men feigning neuroses and deserters began to be dealt with with exemplary severity, did discipline improve—very rapidly. Discipline and unconditional obedience possess the greatest value of all the means for preventing panic. Every historical survey of the present as well as the past shows that the disciplined side in war has shown the greater tenacity, the more efficacious action, and as a result has been the winning side.

On the other hand, the demand for unconditional obedience on the part of the soldier must be paired with the highest degree of awareness of responsibility on the part of the military commander. It cannot be expected that obvious improper orders will be obeyed. Disobedience is also to be expected in the case of unreasonable orders or orders that are incapable of being carried out. Naturally, it is difficult and often impossible to know just where the dividing line lies between what is rea-

sonable and what is unreasonable, and what is possible and what is impossible. This must be left to the commander with confidence in his judgment. Once the decision of the commander has been made, only the principle of "unconditional obedience" has any place.

We have already called attention to the importance of the armament and equipment of an army. The consciousness of being poorly armed operates depressingly and makes for panic. Good armament on the other hand augments the feeling of confidence and security.

The modern armament of the German Army during the first years of World War II was one of the causes of panic to Germany's adversaries. Later on, the superior Soviet *T-34* tank which no German gun outside of the 88-mm could take care of was the source of numerous cases of panic among the German forces. The unique ability of the Soviet equipment to operate under winter conditions contributed, to an important degree, to the numerous cases of German panic toward the end of 1941 and as a result to the reversal of the military situation.

Of course the factor of armament and equipment must not be overevaluated either when other factors exist which make for unsoundness and weakness. In Korea the numerical superiority of the Chinese was for a long time not as great as was asserted. There were no more than 200,000 to 250,000 poorly armed Chinese as opposed to the 150,000 men, almost all excellently armed, of the United Nations forces which, in addition, possessed overwhelming air superiority. It should have been easy to establish a secure defense with this relationship of forces.

Fatigue as a cause of panic has already been rejected since such a condition is normal in war. It is possible to overcome this by strength of will, an ability which must be required of all officers, particu-

larly. On the other hand there are cases where fatigue increases to the point of complete exhaustion, and this includes the command element. Naturally, such a condition is very favorable to panic. In addition to unusually heavy demands on physical strength, abnormal weather conditions such as very low temperatures lead to lethargy and then, as a rule, to incapacitating panic. Indifference with respect to all of its outward details becomes greater than the fear of death itself.

Fear of the known brutality of the adversary may be named as the final inner cause for the outbreak of panic. The cruelty of the Mongolian, Genghis Khan, and his followers undid the armies he attacked through fear and terror before the battle. The Soviet soldier's indifference to danger and the cruel treatment that was to be expected in case of capture had caused many smaller German detachments to abandon their positions and seek safety in flight when they felt themselves threatened with encirclement. Also the basic reason for a great many of the instances of panic during the Korean conflict was probably the fear of falling into the hands of the brutal enemy.

Unexpected Events

All actual or imagined dangers—regardless of whether these are great, moderate, or only illusory—are found in the final analysis to give rise to panic only when they make their appearance unexpectedly. If the same thing occurs but is anticipated, it may induce fear but as a rule no psychological shock. The factor "surprise," for this reason, plays a decisive role in all external causes for panic.

Actual dangers are the most common and, therefore, to be given the most attention. They may be created by the enemy or be the result of one's own faults. The latter may spring from carelessness, negligence, or from deliberate breaches of discipline. The surprise attacks of the French

in the Manche Valley at Gravelotte set off a panic in the German ranks. At Gawaiten-Gumbinen, the unexpectedly severe fire of an invisible enemy first terrified the most timorous of the men, then caused them to flee. Since we are all aware that fear is contagious, this was transmitted to many other soldiers. In 1940 the lightning like and unrelenting attacks of the German tanks, aviation, and other forces—attacks whose speed and force had been considered impossible—produced such fear and terror in the ranks of the French that they often fled from their positions, abandoning them without any compelling reason.

It appears highly probable that at Chingdongni the unexpected attack of a few Communist scouting detachments touched off a bloody fight between the members themselves of the American 27th Infantry Regiment. Thus the enemy is able to create an effectual threat by means of an attack, his fire, or only his appearance at an unexpected time or place or from an unexpected direction.

New weapons or unknown combat methods operate to produce surprise and may produce shock effects. The first gas attack and tanks in World War I, the ricochet fire of the German artillery, the appearance of the German *Stukas*, and the Soviet *T-34* of World War II which the Germans, at first, were unable to knock out are examples of new combat means which repeatedly produced serious panics.

The refusal of a gun to operate was the cause of the panics in Selenaya. The transmission of the faked order which led to panic south of Saporoshe was a case of deliberate action contrary to discipline. In the Manche Valley German forces were seized with panic and fired on one another as the result of a thoughtlessly erroneous action. In 1904 the cry of "Japanese" based on false sense perception sufficed to cause an entire Soviet rifle brigade which was resting miles behind the front to flee in

panic. In other cases of panic we discover, on careful examination, only such insignificant threats that they could be treated as borderline cases and grouped just as well under the heading of "imagined threats and deceptions of the senses or false sense perceptions."

The effort to do away with external causes as far as possible is identical, generally speaking, with the battle against surprise. The most important means to this end are thorough reconnaissance and continuous security. Minute application of these measures, which, during the training period cannot be practiced enough, must therefore be one of the most important obligations and the inescapable duty of every troop unit.

Experience shows that before contact has been established, lack of clarity usually prevails with regard to the enemy and that even during a battle very few reports filter through to the commander. In war of movement small units will regularly be obliged to fight almost without any knowledge of the enemy or friendly forces. They are faced, as Liddell Hart expresses it, with the task of securing themselves, of moving, and of striking the enemy in the dark. This old experience was confirmed in World War II, in Korea, and again in Indochina. Neither will it be possible in the future to eliminate surprise satisfactorily as a cause for the inducement of panic. To expect anything else would be unrealistic.

It is of great importance that all officers and subordinate commanders be carefully instructed with regard to the phenomenon of panic during their training period. They must understand that it is one of their principal duties and a task particularly incumbent on them to be ceaselessly alert to the possibilities of preventing panic and to suppress immediately and with great vigor any panic that flares up. To accomplish this they must be at the critical place at the critical moment, an ability which def-

initely is a part of the art of the commander of a troop unit on the field of battle.

Combat Objective

Over 3,000 years ago, Gideon based his plan of battle against the Midianites on arousing bewilderment and fear in them in order to gain a victory over their far superior forces. The Roman generals, Publius Cornelius Scipio and Gaius Julius Caesar were masters in the use of psychological combat means. The cruel warfare of Genghis Khan and his successors was based to a large degree on crippling their adversaries in advance by fear and terror in order to undermine their powers of resistance. Asiatic brutality appears today to be prompted still by the same motives.

When gas was employed in World War I it may easily have been the aim, in addition to its physical effects, to shatter the morale of the adversary and thus induce panic. This aim was largely indicated when, on the occasion of forced withdrawals, markers were found bearing the warning "contaminated area," although no chemical combat means had actually been used there. Also on the occasion of the first use of tanks at Cambrai in 1917, it is likely that the English aimed at inducing panic. In World War II a conscious effort was made by the mode of employment of the German Luftwaffe and the use of propaganda as a combat means to undermine the moral strength of Germany's adversaries and thereby produce panic. This aim was achieved with particular rapidity in the fighting in the west in 1940, where speedy success was due mainly to the numerous cases of panic induced. The great extent to which the German Luftwaffe included the inducement of panic in its plans is evidenced by the fact that the *Ju-87* was equipped with sirens intended to shatter the morale of the enemy who was being attacked. After the sirens were removed for technical considerations, the whistling

of the overly speeded up propellers and the plunging plane itself, produced damaging effects on morale which often outweighed the material effects of the plane's bombs or weapons' fire. In 1940 Hitler, during his conference with the staff of Von Rundstedt's Army Group and with reference to the crossing of the Meuse, gave voice to the opinion that the Luftwaffe should make use of whistling bombs in order to create panic in the ranks of the enemy.

In the spring of 1942 the Allies began the practice of area bombing designed to undermine the morale of the German people. The idea of undermining the morale of the civil population in order to break their resistance by means of panic like fear had already been advanced by Douhet during the 1920's in his theory of the decisive influence of airpower in war and the pre-eminence of aerial warfare.

Since it is a fact that merits particular mention, it may be stated here that Douhet's expectations were not fulfilled in the case of the German people. Without being organized as a military unit and without having undergone any training, it displayed exemplary discipline and did not succumb to panic. This appears to provide proof that discipline is not unconditionally a quality found in closely welded units only nor does it necessarily have to be drilled in by training. Intelligence and the knowledge that all its action was closely observed and made known by the press sufficed to maintain the morale of the public. We should be able to see from this that the morale of a militia force may be just as good as that of a regular army, under the conditions stated.

One aim of the mines equipped with time and vibration fuses which the Soviets left behind them in 1941, particularly in the towns they abandoned, was to impair the combat morale of the German troops and thus increase their susceptibility to panic.

Of the German troop commanders, Field Marshal Rommel merits particular men-

tion in this connection. We often perceive in his plans the aim to shatter morale as well as to inflict material damage on the enemy, thus preparing the way for panic.

Since all enemy panic may increase the effect of one's own weapons on the enemy and reduce one's own losses, attention should be given to the possibility of the reduction of panic in all combat planning. This can be expected in time of war only when all commanders have been familiarized with this phenomenon in time of peace and continue to occupy themselves with it during their period of training. Since all panic is set off by surprise, the problem of surprising the adversary becomes a matter of the greatest importance from the highest strategic level down to the lowest tactical formation. Surprise is the key to victory, the essential prerequisite for every success.

Conclusion

Military panic, as we have seen, is a human problem—rooted, as it is in the human mind, strength of will, and discipline—hence a timeless problem in contrast to those problems stemming from changes in strategy and tactics necessitated by the advances of technique. Since it so strongly affects the combat worth of the soldier, all factors must be considered that are capable of increasing or decreasing his susceptibility to it. In fact, no less consideration should be given these factors on the part of the responsible authorities of the state than to questions relative to technical matters, organization, and equipment, for the best material equipment of a troop unit may be of little or no avail when its mental state is poor. Hence, considerable danger lurks in the present-day overemphasis of the factor related to matériel. Where a troop unit fails in battle—which when it is facing death can happen all too easily in spite of the best of armament, training, and experience—there remains only the enforcement of obedience. This has been true in all ages

and will continue to be true in the future. Officers must possess the authority and ability to maintain discipline. It must be one of the objectives of the political and military education of the officer to awaken in him an understanding of the fact that the severest of measures may be necessary, for in the final analysis it is only the strict obedience of the individuals and the rigid discipline of the unit that can overcome the phenomenon of panic. Our most recent wars have confirmed the truth of this statement.

Unconditional obedience and good disci-

pline are in no way opposed to the democratic principles of the Western World. For example on 26 January 1946 Field Marshal Montgomery said:

It must be clearly understood that an army is not a mere crowd of individuals but a fighting instrument given form by discipline and controlled by its commander. The essence of democracy is freedom; the essence of the army discipline. The army would leave the nation helpless if it were not accustomed to the immediate obedience of commands.

Future Antiaircraft Employment

Translated and digested by the MILITARY REVIEW from an article by Major R. Elsmie in "The Journal of the Royal Artillery" (Great Britain) October 1953.

THERE is a great body of opinion at large today that condemns the anti-aircraft gun saying it is outdated and useless against the modern high-speed aircraft. Murmurs about guided missiles are heard and the view is often expressed that they are the only sure defense for the future.

The general principles of anti-aircraft defense as practiced today follow a very rigid set of rules. The Royal Air Force finds, by means of long-range radars, all airborne targets. The position of these targets is reported to various Royal Air Force centers where the raids or plots are identified as being "friendly" or "hostile." This information is then extracted and passed to the gun positions to assist them in identifying targets located by their own local radars. The Royal Air Force is then empowered to restrict the fire of the guns depending on the position of any friendly aircraft. It can, and often does, impose restrictions on firing that make it virtually impossible for the guns to fire at all. This process takes a considerable amount of time.

In all modern engagements against air targets *time* is the key factor. It is time that is needed to find an enemy bomber by radar so that our own fighters, guided missiles, or guns can be directed onto their targets. All these countermeasures against an attacking bomber take time to get underway and with bombers flying at ever increasing speeds this much needed time is becoming less and less.

It is a well-known fact that modern radar aids can only operate on the line of sight—in straight lines—and that an aircraft flying below the horizon cannot be detected. It follows then that the higher an aircraft flies the sooner it will be seen over the horizon and that a very low flying aircraft at sea level will give very little warning of its approach.

It can be said that *time* is available in direct proportion to the height at which the attacking aircraft is flying. The higher it flies the more time there is available to locate it and to set countermeasures in action.

Radar is, therefore, the key to the prob-

lem. In the first place it locates and secondly plays a very active part in the interception of the bomber. If the enemy aircraft is flying at 40,000 feet, it can be located by radar a good 200 miles away, but one at sea level may not be seen until it has almost arrived and quite often may not be seen at all by radar. Radar at low angles is difficult to use for two main reasons. The first is that the warning it can give is very short and very often no warning at all is given. The second is that working at low angles radars pick up echos from the ground itself which makes the tracking of targets very difficult and most unreliable.

It is now possible to see that the sky above us can be divided into bands:

1. *High band*—in which all flying objects can be located without difficulty and in ample time for countermeasures to be put into operation.

2. *Medium band*—in which flying objects can be located without difficulty but without sufficient time for countermeasures to be put into operation by airborne pilots or guided missiles.

3. *Low band*—in which flying objects may be located by radar but are more likely only to be spotted by human eyes and also in which radar is ineffective for directing interceptions.

The exact determination of where the various bands begin and end will depend entirely on the expected speed of an attacking force. The greater the speed the sooner the radars have to locate them and the higher the band will have to be. The dividing lines between bands can be given in heights quite easily based on the known performance of enemy aircraft.

The only form of enemy bomber that cannot be classified as flying in a height band is the V-2 type of bomb. These are fired from ground level and rise to a great height and then descend onto their targets. It is not proposed to discuss the destruc-

tion of these weapons but they can be tracked by radar and they should be taken on by guided missiles and destroyed at great heights where their explosion will have no effect on the ground.

The division of responsibility for the bands in space must now be discussed. The high band should be handed over to the human pilots and guided missiles. In this band they can operate with the maximum efficiency with ample warning of the approach of any enemy and with all the interception aids working at maximum efficiency. The Royal Air Force is in its own element and obviously must command all other friendly forces operating in the same area, hence its command of guided missiles. This band is also well out of range of any gun.

The medium band is the one where time is short and the Royal Air Force countermeasures cannot operate efficiently. It is in this band, say below 20,000 feet, that guns and projectiles are the most efficient weapons. Some assert that the gun is already out of date but few appreciate the fact that projectiles have been passing through the sound barrier for many, many years. In fact a high velocity projectile traveling at more than twice the speed of sound is in effect a missile put onto its target by radar and steered to its interception by the gun. It is a small guided missile which differs only from a true guided missile in that once it leaves the barrel of the gun its course cannot be altered. On the other hand its time of flight to a limited height of 20,000 feet is very short. It takes far less time to guide onto its target than an aircraft flying at half the speed and with a rate of climb that bears no comparison to that of the projectile. The gun in the medium band with less time available is still the most efficient weapon.

In the low band, where radar is so uncertain, the human eye and quickness of hand of the light antiaircraft weapons

gunner can still compete with the high-speed aircraft. This is more than proved by the figures of the United Nations air losses at low level in Korea even at the hands of the Chinese.

The problem of the antiaircraft gunner in the medium band stripped of all technicalities is to locate his target, determine its course, and fire a shell to intercept the target. As every one knows it is easy to hit a stationary object or a slow moving one. In fact, it is so easy that it is considered unsporting to hit a "sitting bird." A bird moving slowly can usually be brought down by firing only one barrel of a 12-bore while a faster moving bird may be missed with the first barrel and a second attempt must be made with the second barrel.

The modern antiaircraft problem is the same. To hit a very much faster moving bird the rate of fire must be multiplied so as to increase the probability of a hit. The required rate of fire has been achieved in the modern antiaircraft gun. There remains the effectiveness of the burst of the shell and the distance from the target at which disablement is possible. Here the now possible atomic shell should be of inestimable value. It would disable an aircraft at distances far exceeding the present high explosive shell and, exploded at a height, would have no ill effects upon objects or persons on the ground.

The antiaircraft gunner's chief enemy in the modern battle is still *time*. The gunner works at relatively short ranges and time is, therefore, short and every fraction of a second is vital to him. At the moment, as outlined earlier, the target

goes through a complicated screening to ensure it is not a friendly one. The process may take up to 2 minutes by the time the gunner knows whether or not he may open fire. This delay, where seconds count, is completely unacceptable if the gun is to be given a fair chance of a kill. Since fighter aircraft are inefficient at low heights, they should be banned from operating in them so as to allow an uninterrupted engagement of a target by those better suited to take it on. Safeguards, of course, will have to be introduced near airports and for pilots in difficulties on their way home, but these problems are not insoluble.

The antiaircraft problems of the present day and of the future are based on *time*. If an enemy can be located in time, he can be dealt with. There is a height below which *time* is too short to employ human pilots or guided missiles against an enemy and it is at this height and below that antiaircraft guns are still the most flexible and efficient weapons that can be used. To assist them in their task it is essential to remove the time wasting procedure now in force for identification, and guns must be given a free hand in their sphere with planes avoiding the area in their own interests.

The air battle can only be won by using the most efficient weapon in the right place. Aircraft are not efficient at interception at low heights and the gun is extremely inefficient at great heights. Each should be employed to maximum intensity in the spheres where they work at their greatest efficiency and one should not be permitted to interfere with the other.

Every American yearns for peace—but not at the price of his liberty or his honor.

Secretary of the Army Wilber M. Brucker

BOOKS OF INTEREST TO THE MILITARY READER

MILITARY POLICY AND NATIONAL SECURITY. Edited by W. W. Kaufmann. 274 Pages. Princeton University Press, Princeton, N. J. \$5.00.

By MAJ FREDERICK A. SMITH, Jr., *Inf*

An outstanding collection of essays that will have special appeal to the military reader make up the book. These essays have been written by a group of professors and lecturers associated with the Center of International Studies at Princeton University. They cover such diverse subjects as deterrence, strategic doctrines, limited warfare, passive defense, and the new German Army.

The essays explore the issues of national defense. The authors point out most convincingly that the traditional American concepts of politico-military strategy will have to undergo many changes in the face of Soviet-American parity in atomic weapons. For instance, our country will no longer be able to rely on Air Force strategic bombing as the sole deterrent to future aggression. The Army and Navy must now be strengthened. In particular, a large standing Army supported by a peacetime draft must play, as in the past, a leading role in the country's defense.

For a better understanding of the great issues facing our leaders today in the politico-military field, this book is highly recommended. It could well be considered required reading for the professional Army officer.

NOTES FOR A JOURNAL. By Maxim Litvinov. 347 Pages. William Morrow & Co., New York. \$3.75.

By LT COL MITCHEL GOLDENTHAL, *CE*

Few personal memoirs of the top men in the Soviet regime have ever penetrated the "Iron Curtain" for publication in the West. This remarkable book consists of notes for a journal purportedly dictated by Maxim Litvinov, former People's Commissar for Foreign Affairs from 1930 until 1939. How the manuscript passed into the hands of a group of Russians in Paris is veiled in secrecy. In Paris, Professor Carr, a famous authority on Russia, examined the manuscript for authenticity and stated that it has an undeniable basis in fact.

General Walter Bedell Smith, former Ambassador to the Soviet Union, wrote the prefatory note in which he stated "this is a provocative and challenging document." There is no doubt of the challenging nature of this book which is primarily due to its fragmentary, random nature. The entries run from 1926 to 1939 when Litvinov suffered an eclipse in power and was dramatically replaced by Molotov. Litvinov is blunt and outspoken although always shrewd in his judgments of other important people such as Stalin, Lenin, Beria, Molotov, Malenkov, Hitler, and Mao Tse-tung.

These random jottings give a fascinating gossip insight into the private lives and political maneuvers of Soviet leaders.

PORTRAIT OF PATTON. By Harry H. Semmes. 308 Pages. Appleton-Century-Crofts, Inc., New York. \$6.00.

By LT COL WILLIS B. SCUDDER, *Arty*

Being a center of controversy was not an unusual situation for George S. Patton. It had been his lot prior to World War II and it continued during the war, the difference being only the size of the stage on which he walked. It was his nature and his very life. But be you pro- or anti-Patton you usually agreed on one point—his leadership was firm and certain.

Portrait of Patton is just that, a word picture of the man, written by a close friend of longstanding. Mr. Semmes served under Patton in World Wars I and II. Between wars the friendship continued and on this relationship and Patton's personal papers Mr. Semmes has based this book. It is a study of the man from his California boyhood to his death in a former German Army kaserne.

Military readers will find this book an invaluable source of material as to the things that make a leader—George S. Patton type. It is a must for the military library.

AIRCRAFT TODAY. Edited by John W. R. Taylor. 96 Pages. The Philosophical Library, Inc., New York. \$4.75.

By MAJ JOHN J. EARLEY, *Inf*

This is an annual collection of articles on every aspect of aviation by the experts in their field. Its purpose is to expose to the aviation enthusiast many of the latest items of interest in the varied fields of aviation.

The articles vary from how to build your own airplane to pushbutton warfare. Included are abundant photographs that will be of interest to the collector of aviation progress. It is an up-to-the-minute survey of today's aircraft and an exciting preview of the aircraft of tomorrow.

THE OLD FARMER'S 1956 ALMANAC. By Robert B. Thomas. 112 Pages. Yankee, Inc., Dublin, N. H. \$0.25.

MEN, ROCKETS AND SPACE RATS. By Lloyd Mallan. 335 Pages. Julian Messner, Inc., New York. \$5.95.

By MAJ JOHN N. HIGHLEY, *USAF*

Here is the account of our amazing accomplishments in the exploration of outer space that have made possible the many articles about the artificial earth satellite. This is an authoritative account, with the cooperation of the United States Air Force, of the dramatic achievements and the research projects that will result in the rocket development that will permit us to first launch the satellite and then to travel into the unknown.

This is an actual account of the pilots who first flew the rockets beyond the speed of sound, of the men who used themselves as guinea pigs to discover the effects of speed and force on the human body, of the brave little "space rats" who have taken weird trips into the unknown so that later humans could follow, and of the scientists whose discoveries have given us greater knowledge of the universe and the ability to design and power the rockets to explore the space frontier.

RIFLE SQUAD AND PLATOON IN DEFENSE. By Major Frank F. Rathbun. 104 Pages. The Military Service Publishing Co., Harrisburg, Pa. \$2.00.

THE INCHON-SEOUL OPERATION. U. S. Marine Operations in Korea. Volume II. By Lynn Montross and Captain Nicholas Canzona, United States Marine Corps. 361 Pages. Superintendent of Documents, Government Printing Office, Washington, D. C. \$2.50.

STUDIES FOR STUDENT PILOTS. By Michael Royce. 282 Pages. The Philosophical Library, Inc., New York. \$6.00.

MEMOIRS BY HARRY S. TRUMAN. Volume II: Years of Trial and Hope. 521 Pages. Doubleday & Co., Inc., New York. \$5.00.

By LT COL CHARLES E. LAMONT, *Inf*

This is a revealing account of international events from the Chinese situation through the Korean conflict as written by one of the chief participants.

Mr. Truman shows that he has been a keen student of American history, particularly those events influencing or influenced by any of the past presidents.

Certain national events, notably the problems arising from atomic energy, the Taft-Hartly Act, price controls, and tide-lands oil, are described in a new light. While the reader may not always agree with Mr. Truman's viewpoint, he must respect his honesty.

One of the most interesting parts of the book describes Mr. Truman's reaction and commentary on past presidents. The book may be profitably read by students of current history on that score alone.

SO YOU'RE GOING IN THE ARMY! By Captain John L. Begley. 171 Pages. Military Service Publishing Co., Harrisburg, Pa. \$1.95.

By MAJ JOHN H. STUBBS, *AGC*

Into this small book Captain Begley has compressed a veritable gold mine of practical and worthwhile information. It will be of genuine assistance to anyone planning their entry into the military service and will continue to stand them in good stead as a basic reference throughout the first 6 to 8 months of their military career. Captain Begley's suggestions and advice to both the individual inductee or enlistee, and to his parents or other dependents are realistic and foresighted.

Of particular interest to the new soldier and his family are the maps and information summaries concerning the Army posts at which basic training centers are currently located.

THE RISE OF CHINESE MILITARY POWER 1895-1912. By Ralph L. Powell. 383 Pages. Princeton University Press, Princeton, N. J. \$6.00.

By COL DANIEL C. POLLOCK, *USMC*

The author has two objectives in this competently written book. First, he portrays the growth of semipersonal armies and the rise of militarists to power in this period. Second, he traces the modernization of the land forces of the Chinese Empire and evaluates the degree of progress that was obtained. The practice of depending on foreign powers to supply essential weapons of war was at best a hazardous policy 50 years ago. Today, the real power and independence of action of the Communist armies is gravely threatened by their dependence on the Soviet Union. The author states that we in the West have underestimated the military potential of oriental troops, such miscalculation being based primarily in the field of physiological and psychological characteristics. The book is of interest to the students of modern China as well as to the military reader.

REACTIONARY! Sergeant Lloyd W. Pate's Story (as told to B. J. Cutler). 150 Pages. Harper & Bros., New York. \$2.50.

By MAJ RAY J. YANTIS, *Inf*

From Sergeant Pate's discussion of his early life, one hardly expects to find him the leader of a "reactionary" squad in a Korean prisoner of war camp. Captured on 1 January 1951, he soon became a source of extreme irritation to his captors, losing little opportunity to continue the fight. Not only did he resist the "progressive" teachings but he led organized efforts to encourage others to do likewise. Contrasted to this are pictured the actions of those who collaborated and their sorry reward.

The account of these 32 months is quickly read but it will leave questions for which we must find answers.

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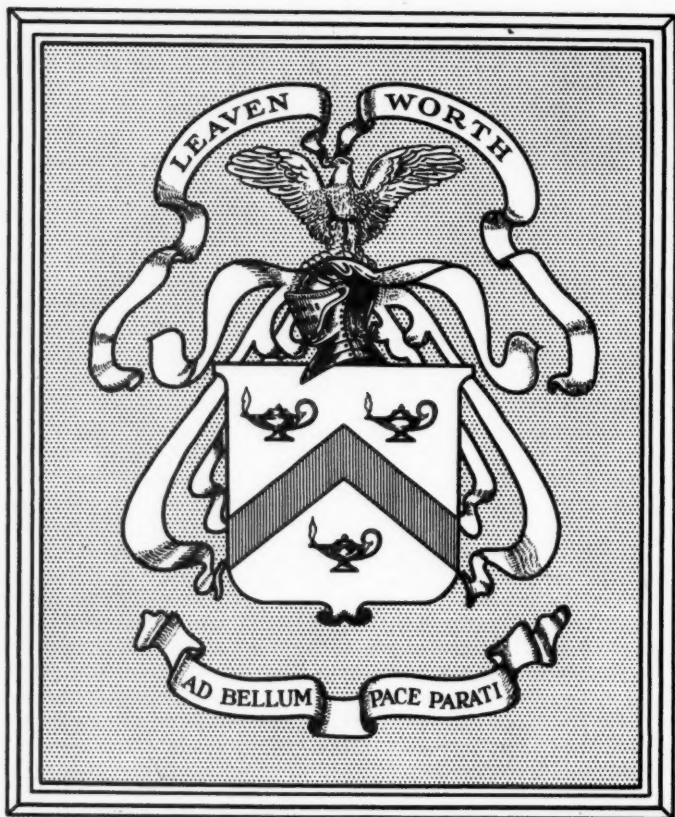
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